

**AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT**

1. CONTRACT ID CODE PAGE OF PAGES

2. AMENDMENT/MODIFICATION NO. 0005	3. EFFECTIVE DATE Sep 02, 2004	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. (If applicable)
6. ISSUED BY District Engineer U.S. Army Engineer District, Philadelphia Wanamaker Building, 100 Penn Square East Philadelphia, PA 19107-3390	CODE	7. ADMINISTERED BY (If other than Item 6) US Army Engineer District, Philadelphia POC: Denise DeTitta Wanamaker Building, 100 Penn Square East Philadelphia, PA 19107-3390	CODE

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)	(√)	9A. AMENDMENT OF SOLICITATION NO. W912BU-04-B-0025
	×	9B. DATED (SEE ITEM 11) August 2, 2004
		10A. MODIFICATION OF CONTRACTS/ORDER NO.
		10B. DATED (SEE ITEM 13)
CODE	FACILITY CODE	

**11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS**

The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers  is extended,  is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a) By completing Items 8 and 15, and returning 0 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

**12. ACCOUNTING AND APPROPRIATION DATA (If required)**

New Stone Seawall, Hereford Inlet, Townsend Inlet to Cape May Inlet Shoreline Protection, Cape May County, NJ

**13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.**

(√)	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER (Specify type of modification and authority)

**E. IMPORTANT:** Contractor  is not,  is required to sign this document and return \_\_\_\_\_ copies to the issuing office.

**14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)**

**THIS AMENDMENT DOES NOT EXTEND THE SEPTEMBER 14, 2004 BID OPENING DATE.**

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)	16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)
15B. CONTRACTOR/OFFEROR  (Signature of person authorized to sign)	15C. DATE SIGNED
16B. UNITED STATES OF AMERICA BY (Signature of Contracting Officer)	16C. DATE SIGNED

14. DESCRIPTION OF AMENDMENT (continued)

a. SF 1442 AND BIDDING SCHEDULE: Please delete pages 00010-3, 00010-4, and 00010-5 in their entirety and substitute the revised pages of the same numbers, annotated Amendment No. 0005, attached hereto.

b. SECTION 00800 - SPECIAL CONTRACT REQUIREMENTS: Please delete this section in its entirety and substitute the revised section of the same number, annotated Amendment No. 0005, attached hereto.

c. TECHNICAL SPECIFICATIONS:

(1) Section 01010 - SUMMARY OF WORK: Paragraph 1.2 entitled "DESCRIPTION OF WORK" - Please add the following item to the list of major work items:

***"k. Structures monitoring."***

(2) Section 01330 - SUBMITTAL PROCEDURES: Please add page 13 to this section, annotated Amendment No. 0005, attached hereto.

(3) Section 01575 - STRUCTURES MONITORING: Please add this new section, annotated Amendment No. 0005, attached hereto.

(4) Section 02215 - GEOTEXTILE: Please delete this section in its entirety and substitute the revised section of the same number, annotated Amendment No. 0005, attached hereto.

(5) Section 02271 - SEAWALL CONSTRUCTION: Please delete this section in its entirety and substitute the revised section of the same number, annotated Amendment No. 0005, attached hereto.

(6) Section 02400 - STORM WATER OUTFALL PIPE EXTENSIONS: Please delete this section in its entirety and substitute the revised section of the same number, annotated Amendment No. 0005, attached hereto.

(7) Section 02446 - DUNE GRASS AND WOODY VEGETATION: Please delete this section in its entirety and substitute the revised section of the same number, annotated Amendment No. 0005, attached hereto.

(8) Section 03300 - CONCRETE: Please delete this section in its entirety and substitute the revised section of the same number, annotated Amendment No. 0005, attached hereto.

d. CONTRACT DRAWINGS: Please make a pen and ink change to Drawing No. 62435 - top center heading, entitled "STA.44+82.89 N.Az. 130°55'00" TO STA.56+72@281° TO BASELINE": Please delete first bullet note under this heading and replace with the following revised bullet:

"• Remove Concrete Debris. Existing Stone to be Removed as Necessary. Construct New Seawall."

e. Please indicate receipt of this amendment on Standard Form 1442 (SOLICITATION, OFFER, AND AWARD) as Amendment No. 0005. Failure to acknowledge all amendments may be cause for rejection of the bid.

BID SCHEDULE  
 (To be attached to SF 1442)

Description	Estimated Quantity	Unit	Unit Price	Estimated Amount
<u>BASE BID - STATION 24+50 TO STATION 56+72:</u>				
1. Mobilization/Demobilization	1	JOB	LS	\$
2. Excavation	30,700	CY	\$	\$
3. Stone Fill	22	TON	\$	\$
4. Marine Mattresses	11,250	SY	\$	\$
5. Underlayer Stone Under 4-Ton Capstone	8,900	TON	\$	\$
6. 4-Ton Capstone	33,500	TON	\$	\$
7. Concrete Cap	320	CY	\$	\$
8. Deep Water Stabilization				
8a. Deep Water Stabilization: Stone Fill	400	TON	\$	\$
8b. Deep Water Stabilization: Marine Mattresses	12,500	SY	\$	\$
8c. Deep Water Stabilization: Underlayer Stone	29,200	TON	\$	\$
8d. Deep Water Stabilization: 4-Ton Capstone	1,950	TON	\$	\$
9. Outfall Extensions	1	JOB	LS	\$
10. Removal of Concrete Rubble, Debris, and Void Filler	355	TON	\$	\$
11. <b>Structures Monitoring</b>	<b>1</b>	<b>JOB</b>	<b>LS</b>	<b>\$</b>

TOTAL ESTIMATED BASE BID AMOUNT: \$

BID SCHEDULE  
 (To be attached to SF 1442)

Description	Estimated Quantity	Unit	Unit Price	Estimated Amount
<u>OPTION 1 - STATION 56+72 TO STATION 88+14:</u>				
12. Excavation	46,000	CY	\$	\$
13. Stone Fill	900	TON	\$	\$
14. Marine Mattresses	11,000	SY	\$	\$
15. 4-Ton Capstone	17,000	TON	\$	\$
16. Concrete Cap	3,000	CY	\$	\$
17. Outfall Extensions	1	JOB	LS	\$
18. Dune Grass	1	JOB	LS	\$
19. <b>Structures Monitoring</b>	<b>1</b>	<b>JOB</b>	<b>LS</b>	<b>\$</b>

TOTAL ESTIMATED OPTION 1 AMOUNT: \$

OPTION 2 - STATION 0+00 TO STATION 24+50:

20. Excavation	5,900	CY	\$	\$
21. Stone Fill	450	TON	\$	\$
22. Marine Mattresses	11,350	SY	\$	\$
23. Underlayer Stone Under 4-Ton Capstone	4,400	TON	\$	\$
24. Underlayer Stone Under 2-Ton Capstone	1,750	TON	\$	\$
25. 4-Ton Capstone	18,000	TON	\$	\$
26. 2-Ton Capstone	15,800	TON	\$	\$
27. Outfall Extensions	1	JOB	LS	\$
28. Removal of Concrete Rubble, Debris, and Void Filler	225	TON	\$	\$
29. <b>Structures Monitoring</b>	<b>1</b>	<b>JOB</b>	<b>LS</b>	<b>\$</b>

TOTAL ESTIMATED OPTION 2 AMOUNT: \$

BID SCHEDULE  
(To be attached to SF 1442)

<u>Description</u>	<u>Estimated Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Estimated Amount</u>
--------------------	-------------------------------	-------------	-----------------------	-----------------------------

OPTION 3:

<b>30.</b> Stone Fill Between Steel Sheetpile Bulkhead And New Structure	962	TON	\$	\$
--	-----	-----	----	----

TOTAL ESTIMATED OPTION 3 AMOUNT: \$

TOTAL ESTIMATED BASE BID AND OPTIONS 1, 2 & 3 AMOUNT: \$

NOTE:

- Bidders must bid on all items.
- Bidders are directed to the "Pre-Award Survey Submittal Requirements" of Section 00610.

THIS PAGE HAS BEEN LEFT INTENTIONALLY BLANK

1

SECTION 00800  
SPECIAL CLAUSES

INDEX

PARA	TITLE
SC-1	COMMENCEMENT, PROSECUTION AND COMPLETION OF WORK
SC-2	LIQUIDATED DAMAGES - CONSTRUCTION
SC-3	CONTINUING CONTRACTS
SC-4	CONTRACT DRAWINGS, MAPS AND SPECIFICATIONS
SC-5	PHYSICAL DATA
SC-6	LAYOUT OF WORK
SC-7	DAMAGE TO WORK
SC-8	PERFORMANCE OF WORK BY THE CONTRACTOR
SC-9	ENVIRONMENTAL LITIGATION
SC-10	SIGNAL LIGHTS
SC-11	INSPECTION
SC-12	QUANTITY SURVEYS
SC-13	EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE
SC-14	CERTIFICATES OF COMPLIANCE
SC-15	PERFORMANCE EVALUATION OF CONTRACTOR
SC-16	TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER
SC-17	INSURANCE REQUIREMENTS
SC-18	PARTNERING

THIS PAGE HAS BEEN LEFT INTENTIONALLY BLANK

SPECIAL CLAUSES

SC-1 COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK (APR 1984)

The Contractor shall be required to (a) commence the Base Bid work under this contract within 14 calendar days after the Contractor receives the notice to proceed for the Base Bid, (b) prosecute the work diligently, and (c) complete the Base Bid work, ready for use, not later than 540 calendar days after the date the Contractor receives the notice to proceed for the Base Bid work.

Option 1: The Contracting Officer has the right to exercise Option 1 within 180 calendar days after the Contractor receives the notice to proceed for the Base Bid work. The period of performance of the contract will be extended 180 days for the award of Option 1 work.

Option 2: The Contracting Officer has the right to exercise Option 2 within 180 calendar days after the Contractor receives the notice to proceed for the Base Bid work. The period of performance of the contract will be extended 180 days for the award of Option 2.

Option 3: The Contracting Officer has the right to exercise Options 3 within 180 calendar days after the Contractor receives the notice to proceed for the Base Bid work. The period of performance of the contract will not be extended for the award of Option 3. Option 3 work shall be completed concurrently with Base work.

The time stated for completion shall include final cleanup of the premises. (FAR 52.211-10)

SC-2 LIQUIDATED DAMAGES - CONSTRUCTION (SEP 2000)

(a) If the Contractor fails to complete the work within the time specified in the contract, the Contractor shall pay liquidated damages to the Government in the amount of \$1,337.00 for each calendar day of delay until the work is completed or accepted.

(b) If the Government terminates the Contractor's right to proceed, liquidated damages will continue to accrue until the work is completed. These liquidated damages are in addition to excess costs of repurchase under the Termination clause. (FAR 52.211-12)

SC-3 CONTINUING CONTRACTS (MARCH 1995 EFARS)

a. This is a continuing contract, as authorized by Section 10 of the River and Harbor Act of September 22, 1922 (33 U.S. Code 621). The payment of some portion of the contract price is dependent upon reservations of funds from future appropriations, and from future contribution to the project having one or more non-federal project sponsors. The responsibilities of the Government are limited by this clause notwithstanding any contrary provision of the "Payments to Contractor" clause or any other clause of this contract.

b. The sum of \$16,000 has been reserved for this contract and is available for payments to this contractor during fiscal year 2004. It is expected that Congressional and non-federal project sponsor contributions will amount to approximately \$5,000,000 for fiscal year 2005. ***The remainder of the contract funds will be provided by Congressional and non-federal***

***appropriations in fiscal years 2006 and 2007.***

c. Failure to make payments in excess of the amount currently reserved, or that may be reserved from time to time, shall not entitle the Contractor to a price adjustment under the terms of this contract except as specifically provided in paragraphs f and i below. No such failure shall constitute a breach of this contract, except that this provision shall not bar a breach-of-contract action if an amount finally determined to be due as a termination allowance remains unpaid for one year due solely to a failure to reserve sufficient additional funds therefore.

d. The Government may at any time reserve additional funds for payments under the contract if there are funds available for such purpose. The Contracting Officer will promptly notify the Contractor of any additional funds reserved for the contract by issuing an administrative modification to the contract.

e. If earnings will be such that funds reserved for the contract will be exhausted before the end of any fiscal year, the Contractor shall give written notice to the Contracting Officer of the estimated date of exhaustion and the amount of additional funds which will be needed to meet payments due or to become due under the contract during that fiscal year. This notice shall be given not less than 45 nor more than 60 days prior to the estimated date of exhaustion.

f. No payments will be made after exhaustion of funds except to the extent that additional funds are reserved for the contract. The Contractor shall be entitled to simple interest on any payment that the Contracting Officer determines was actually earned under the terms of the contract and would have been made except for exhaustion of funds. Interest shall be computed from the time such payment would otherwise have been made until actually or constructively made, and shall be at the rate established by the Secretary of the Treasury pursuant to Public Law 92-41, 85 STAT 97, as in effect on the first day of the delay in such payment.

g. Any suspension, delay, or interruption of work arising from exhaustion or anticipated exhaustion of funds shall not constitute a breach of this contract and shall not entitle the Contractor to any price adjustment under the "Suspension of Work" clause or in any other manner under this contract.

h. An equitable adjustment in performance time shall be made for any increase in the time required for performance of any part of the work arising from exhaustion of funds or the reasonable anticipation of exhaustion of funds.

i. If, upon the expiration of sixty (60) days after the beginning of the fiscal year following an exhaustion of funds, the Government has failed to reserve sufficient additional funds to cover payments otherwise due, the Contractor, by written notice delivered to the Contracting Officer at any time before such additional funds are reserved, may elect to treat his right to proceed with the work as having been terminated. Such a termination shall be considered a termination for the convenience of the Government.

j. If at any time it becomes apparent that the funds reserved for any fiscal year are in excess of the funds required to meet all payments due or to become due the Contractor because of work performed and to be performed under the contract during the fiscal year, the Government reserves the right, after notice to the Contractor, to reduce said reservation by the

amount of such excess. (EFAR 52.232-5000)

SC-4 CONTRACT DRAWINGS, MAPS AND SPECIFICATIONS (DEC 1991)

a. Upon obtaining the plans and specifications, the Contractor shall:

- (1) Immediately check the specifications and all drawings;
- (2) Compare the specifications and all drawings and verify the figures before laying out the work;
- (3) Promptly notify the Contracting Officer of any discrepancies; and
- (4) Be responsible for any errors which might have been avoided by complying with this paragraph (b).

b. Large scale drawings shall, in general, govern small scale drawings. Figures marked on drawings shall, in general, be followed in preference to scale measurements.

c. Omissions from the drawings or specifications or the misdescription of details of work which are manifestly necessary to carry out the intent of the drawings and specifications, or which are customarily performed, shall not relieve the contractor from performing such omitted or misdescribed details of the work, but shall be performed as if fully and correctly set forth and described in the drawings and specifications.

d. The work shall conform to the specifications and the contract drawings identified on the following, all of which are available in the office of the District Engineer, U.S. Army Engineer District, Philadelphia, Room 643, Wanamaker Building, 100 Penn Square East, Philadelphia, PA 19107. Drawings are titled: "Stone Seawall, Hereford Inlet, NJ Shoreline Protection, Townsend Inlet To Cape May Inlet, North Wildwood, New Jersey" and have the following drawing numbers, subtitles, and dates as indicated on Sheet 1, Drawing No. 62431. (DFARS 252.236-7001)

SC-5 PHYSICAL DATA (APR 1984)

Data and information furnished or referred to below is for the Contractor's information. The Government shall not be responsible for any interpretation of or conclusion drawn from the data or information by the Contractor. (FAR 52.236-4)

a. Weather Conditions. The climate of the area is referred to as "continental" by climatologists, characterized by cold winters and moderately hot summers. Complete weather records and reports may be obtained from the local U.S. Weather Bureau Office nearest to the work site. The Contractor shall satisfy himself as to the hazards likely to arise from weather conditions during the construction period.

b. Transportation Facilities. The work site is accessible from the Garden State Parkway and Route 9 and by water. The Contractor shall be responsible for all investigations of load carrying capacities of bridges and roadways.

c. Channel Traffic. Traffic in the work area consists of commercial and recreational vessels.

d. Tide Data. See contract drawings for tide data for this project area.

e. Obstruction of Channel. The Government will not undertake to keep the channel free from vessels or other obstructions, except to the extent of such regulations if any, as may be prescribed by the Secretary of the Army,

in accordance with the provisions of Section 7 of the River and Harbor Act approved 8 August 1917. The Contractor will be required to conduct the work in such manner as to obstruct navigation as little as possible, and in case the Contractor's plant so obstructs the channel as to make difficult or endanger the passage of vessels, said plant shall be promptly moved on the approach of any vessel to such an extent as may be necessary to afford a practicable passage. The Contractor shall request the U.S. Coast Guard to issue a Notice to Mariners advising navigation interests that the Contractor's plant will operating in the Inlet. The Contractor shall submit each such request to the U.S. Coast Guard, MSO/Group Philadelphia, 1 Washington Avenue, Philadelphia, PA 19147-4395. The Contractor shall furnish a copy of the request to the Contracting Officer not less than five days prior to the start of work. The request shall contain the approximate time required for completion of the work. Upon completion of the work, the Contractor shall promptly remove his plant, including ranges, buoys, piles and other marks placed by him under the contract in navigable waters and on shore.

f. Navigation Aids. The Contractor shall not relocate or move any aids to navigation that have been established by the U.S. Coast Guard. If it becomes necessary to have any aid to navigation moved in order to complete contract operations under this contract, the Contractor shall notify the U.S. Coast Guard at least 15 days prior to the desired date for movement of the aid. All requests shall be made in writing to: Commander (OAN), Fifth Coast Guard District, 431 Crawford Street, Portsmouth, VA 23704. A copy of each request shall be furnished to the Contracting Officer.

g. Bridge to Bridge Radio Telephone Equipment. In order that radio telephone communication may be with passing vessels, all plants engaged in work under the contract shall be equipped with and operate bridge-to-bridge radio telephone equipment. The radio telephone equipment shall operate on VHF Channel 13 (156.65 MHz) with low power output having a communication range of approximately ten miles. The frequency has been approved by the Federal Communication Commission.

h. Survey Controls. Survey control description sheets are included as Section 00840 of this contract.

i. Magnitude of the Contract Work. The estimated value of the contract work is between \$10,000,000 and \$25,000,000.

j. Hours of Work. Unless otherwise specified, the Contractor shall be permitted to perform the contract work between the hours of 7:00 am and 4:30 pm, Monday through Friday. Federal holidays (New Year's Day, Martin Luther King Jr's Birthday, Presidents Day, Memorial Day, Independence Day, Labor Day, Columbus Day, Veterans Day, Thanksgiving Day, and Christmas Day) that fall within the work week will not be considered as work days. Prior to performing any work during hours other than those specified, the Contractor shall submit a request to the Borough of North Wildwood and the Contracting Officer for review and approval to extend his work hours to 7 pm. Overtime requests shall be submitted not less than 24 hours prior to the time the Contractor desires to perform the overtime work. The Contractor shall provide at least a 24 hour advanced notification to establish when on-site work will commence and prior to restarting on-site work following any stoppage of work lasting longer than five normal workdays. Notification shall be provided by phone, or person, or in writing, and shall be given directly to the Contracting Officer.

The Contractor shall lay out its work from Government-established survey controls, the description of which are provided in Section 00840 of this document, and shall be responsible for all measurements in connection therewith. The Contractor shall furnish, at its own expense, such stakes, templates, platforms, equipment, range markers and labor as may be required in laying out any part of the work from the triangulation stations and bench marks established by the Government. The Contractor shall be responsible for executing the work to such lines and grades as may be established or indicated by the Contracting Officer. It shall be the responsibility of the Contractor to maintain and preserve all stakes and other marks established by the Contracting Officer until authorized to remove them. If such marks are destroyed by the Contractor or through its negligence prior to their authorized removal, they may be replaced by the Contracting Officer at his discretion. The expense of replacement will be deducted from any amounts due or to become due to the Contractor. (CENAP)

SC-7 DAMAGE TO WORK

The responsibility for damage to any part of the permanent work shall be as set forth in the clause of the contract entitled "Permits and Responsibilities". However, if, in the judgement of the Contracting Officer, any part of the permanent work performed by the Contractor is damaged by flood or hurricane, which damage is not due to the failure of the Contractor to take reasonable precautions or to exercise sound engineering and construction practices in the conduct of the work, the Contractor shall make the repairs as ordered by the Contracting Officer and full compensation for such repairs will be made at the applicable contract unit or lump sum prices as fixed and established in the contract. If, in the opinion of the Contracting Officer, there are no contract unit or lump sum prices applicable to any part of such work, an equitable adjustment pursuant to Contract Clause entitled "Changes," will be made as full compensation for the repairs of that part of the permanent work for which there are no applicable contract unit or lump sum prices. Except as herein provided, damages to all work (including temporary construction), utilities, materials, equipment and plant shall be repaired to the satisfaction of the Contracting Officer at the Contractor's expense regardless of the cause of such damage. (CENAP)

SC-8 PERFORMANCE OF WORK BY THE CONTRACTOR (APR 1984)

The Contractor shall perform on the site, and with its own organization, work equivalent to at least twenty (20) percent of the total amount of work to be performed under the contract. This percentage may be reduced by a supplemental agreement to this contract if, during performing the work, the Contractor requests a reduction and the Contracting Officer determines that the reduction would be to the advantage of the Government. (FAR 52.236-1)

SC-9 ENVIRONMENTAL LITIGATION (1974 NOV OCE)

a. If the performance of all or any part of the work is suspended, delayed, or interrupted due to an order of a court of competent jurisdiction as a result of environmental litigation, as defined below, the Contracting Officer, at the request of the Contractor, shall determine whether the order is due in any part to the acts or omissions of the Contractor or a Subcontractor at any tier not required by the terms of the contract. If it is determined that the order is not due in any part to acts or omissions of the Contractor or a Subcontractor at any tier other than as required by the terms of this contract, such suspension, delay, or interruption shall be

considered as if ordered by the Contracting Officer in the administration of this contract under the terms of the SUSPENSION OF WORK clause of this contract. The period of such suspension, delay, or interruption shall be considered unreasonable, and an adjustment shall be made for any increase in the cost of performance of this contract (excluding profit) as provided in that clause, subject to all the provisions thereof.

b. The term "environmental litigation", as used herein, means a lawsuit alleging that the work will have an adverse effect on the environment or that the Government has not duly considered, either substantively or procedurally, the effect of the work on the environment. (CENAP)

SC-10 SIGNAL LIGHTS (FEB 1983)

The Contractor shall display signal lights and conduct his operations in accordance with the General Regulations of the Coast Guard governing lights and day signals to be displayed by towing vessels with tows on which no signals can be displayed, vessels engaged in submarine or bank protection operations, and day signals to be displayed by vessels of more than 65 feet in length moored or anchored in a fairway or channel, and the passing by other vessels of floating plant working navigable channels, as approved by the Commandant, U.S. Coast Guard with respect to vessels in inland waters ( 33 CFR 88), as applicable. (CENAP)

SC-11 INSPECTION (APR 1965)

The Contractor will be required:

a. To furnish, on the request of the Contracting Officer, the use of such boats, boatmen, laborers, a part of the ordinary and usual equipment and crew of the plant as may be reasonably necessary in inspecting and supervising the work, and, during emergencies. Staff inspections, requiring such transportation, may be conducted by Government personnel as often as twice per day.

b. To furnish, on the request of the Contracting Officer, suitable transportation from all points on shore designated by the Contracting Officer to and from the various pieces of plant and to and from the work areas.

Should the Contractor refuse, neglect, or delay compliance with these requirements, the specific facilities may be furnished and maintained by the Contracting Officer, and the cost thereof will be deducted from any amounts due or to become due the Contractor. (CENAP)

SC-12 QUANTITY SURVEYS (APR 1984)

a. Quantity surveys shall be conducted, and the data derived from these surveys shall be used in computing the quantities of work performed and the actual construction completed and in place.

b. The Contractor shall conduct the original and final surveys and make the computations based on them. The Contractor shall conduct the surveys for any periods for which progress payments are requested and shall make the computations based on these surveys. All surveys conducted by the Contractor shall be conducted under the direction of a representative of the Contracting Officer, unless the Contracting Officer waives this requirement in a specific instance. All surveys shall be conducted in accordance with Section 01720 SURVEY REQUIREMENTS of these specifications.

c. Promptly upon completing a survey, the Contractor shall furnish the originals of all field notes and all other records relating to the survey or to the layout of the work to the Contracting Officer, who shall use them as necessary to determine the amount of progress payments. The Contractor shall retain copies of all such material furnished to the Contracting Officer. (FAR 52.236-16)

SC-13 EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE (MAR 1995)

a. This clause does not apply to terminations. See 52.249-5000, Basis for Settlement of Proposals, and FAR Part 49.

b. Allowable cost for construction and marine plant and equipment in sound workable condition owned or controlled and furnished by the Contractor or sub-contractor at any tier shall be based on actual cost data for each piece of equipment or groups of similar serial or series for which the Government can determine both ownership and operating costs from the Contractor's accounting records. When both ownership and operating costs cannot be determined for any piece of equipment from the Contractor's accounting records, costs for the equipment shall be based upon the applicable provisions of EP 1110-1-8, "Construction Equipment Ownership and Operating Expense Schedule," Region I. Working conditions shall be considered to be average for determining equipment rates using the schedule unless specified otherwise by the Contracting Officer. For equipment not included in the schedule, rates for comparable pieces of equipment may be used or a rate may be developed using the formula provided in the schedule. For forward pricing, the schedule in effect at the time of negotiations shall apply. For retrospective pricing, the schedule in effect as of the time work was performed shall apply.

c. Equipment rental costs are allowable, subject to the provisions of FAR 31.205(d)(ii) and FAR 31.205-36. Rates for equipment rented from an organization under common control, lease-purchase arrangements, and sale-leaseback arrangements, will be determined using the schedule, except that actual rates will be used for equipment leased from an organization under common control that has an established practice of leasing the same or similar equipment to unaffiliated lessees.

d. When actual equipment costs are proposed and the total amount of the pricing action exceeds the small purchase threshold, the contracting officer shall request the contractor to submit either certified cost or pricing data, or partial/limited data, as appropriate. This data shall be submitted on Standard Form 1411, "Contract Pricing Proposal Cover Sheet." (EFARS 52.231-5000)

Note #1: The small purchase threshold is \$100,000.

Note #2: By submitting cost or pricing data, the Contractor grants to the Contracting Officer or an authorizing representative the right to examine those books, records, documents and other supporting data that will permit evaluation of the proposed equipment costs. This right shall extend for two years after expiration of contract performance. After price agreement the Contractor shall certify that the equipment costs or pricing data submitted are accurate, complete and current.

SC-14 CERTIFICATES OF COMPLIANCE

Any certificates required for demonstrating proof of compliance of

materials with specifications requirements shall be executed in triplicate copies. Each certificate shall be signed by an official authorized to certify on behalf of the manufacturing company and shall contain the name and address of the Contractor, the project name and location, and the quantity and date or dates of shipment or delivery to which the certificates apply. Copies of laboratory test reports submitted with certificates shall contain the name and address of the testing laboratory and the date or dates of the tests to which the report applies. Certification shall not be construed as relieving the Contractor from furnishing satisfactory material, if, after tests are performed on selected samples, the material is found not to meet the specific requirements.  
(CENAP)

SC-15 PERFORMANCE EVALUATION OF CONTRACTOR

a. As a minimum, the Contractor's performance will be evaluated upon final acceptance of the work. However, interim evaluation may be prepared at any time during contract performance when determined to be in the best interest of the Government.

b. The format for the evaluation will be DD 2626, and the Contractor will be rated either outstanding, above average, satisfactory, marginal, or unsatisfactory in the areas of Contractor Quality Control, Timely Performance, Effectiveness of Management, Compliance with Labor Standards, and Compliance with Safety Standards. The Contractor will be advised of any unsatisfactory rating, either in an individual element or in the overall rating, prior to completing the evaluation, and all Contractor comments will be made a part of the official record. Performance Evaluation Reports will be available to all DOD Contracting offices for their future use in determining Contractor responsibility, in compliance with DFARS 236.201(c)(1). (CENAP)

SC-16 TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER (OCT 1989)

a. This clause specifies the procedure for determination of time extensions for unusually severe weather in accordance with the Contract Clause entitled: "Default (Fixed-Price Construction)". In order for the Contracting Officer to award a time extension under this clause, the following conditions must be satisfied:

(1) The weather experienced at the project site during the contract period must be found to be unusually severe, that is, more severe than the adverse weather anticipated for the project location during any given month.

(2) The unusually severe weather must actually cause a delay to the completion of the project. The delay must be beyond the control and without the fault or negligence of the Contractor.

b. The following schedule of monthly anticipated adverse weather delays is based on National Oceanic and Atmospheric Administration (NOAA) or similar data for the project location and will constitute the base line for monthly weather time evaluations. The Contractor's progress schedule must reflect these anticipated adverse weather delays in all weather dependent activities. For the purpose of this contract, unusually severe weather is defined as daily precipitation equal to or exceeding 0.5 inches and/or maximum daily temperature not exceeding 32 degrees F.

MONTHLY ANTICIPATED ADVERSE WEATHER DELAY  
WORK DAYS BASED ON (5) DAY WORK WEEK

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
6	4	2	2	2	1	1	2	1	2	2	2

c. Upon acknowledgment of the Notice to Proceed (NTP) and continuing throughout the contract, the Contractor shall record on the daily CQC report, the occurrence of adverse weather and resultant impact to normal scheduled work. Actual adverse weather days must prevent work on critical activities for 50 percent or more of the Contractor's scheduled work day. The number of actual adverse weather delay days shall include days impacted by actual adverse weather (even if adverse weather occurred in previous month), be calculated chronologically from the first to the last day of each month, and be recorded as full days. If the number of actual adverse weather delay days exceeds the number of days anticipated in paragraph b. above, the Contracting Officer will convert any qualifying delays to calendar days, giving full consideration for equivalent fair weather work days, and issue a modification in accordance with the contract clause entitled: "Default (Fixed Price Construction)". (ER 415-1-15)

SC-17 INSURANCE REQUIREMENTS

Evidence of the following insurance shall be provided to the Contracting Officer prior to commencement of work and shall be maintained throughout the period of performance. Contractor shall co-insure the state of New Jersey and the City of Avalon under General Liability Insurance, as noted below in paragraph (a).

a. General Liability Insurance (Comprehensive form of policy): Bodily Injury Liability - \$500,000 per occurrence.

b. Automobile Liability Insurance (Comprehensive form of policy): Bodily Injury Liability - \$200,000 per person and \$500,000 per accident. Property Damage Liability - \$20,000 per accident.

c. Workmen's Compensation and Employer's Liability Insurance: Compliance with applicable workmen's compensation and occupational disease statutes is required. Employer's liability coverage in the minimum amount of \$100,000 is also required."

d. Applicable Marine Casualty and Marine Workmen's Compensation Insurance: As appropriate for this contract.

SC-18 PARTNERING

In order to most effectively accomplish this contract, the Government proposes to form a cohesive partnership with the contractor. Key players within this partnership may also include subcontractors, users, operators, tenants or other parties deemed appropriate by the Government and contractor. This partnership would strive to draw upon the strengths of each organization and a system of superior real time communications that will be developed by the partners in an effort to achieve a quality product, on time and within budget. This partnership would be developed bilaterally and participation will be totally voluntary. Costs associated with effectuating this partnership will be absorbed by the parties as an alternate method of normal contract administration activities with no change in contract price. Activities are expected to include one or more brainstorming sessions among potential partners pursuant to a

Memorandum-Of-Understanding that will detail the bylaws of operation. By-laws will establish, for example, an effective means of addressing clarifications or issues that may develop during the construction process, to include real time Alternate Dispute Resolution procedures to effectively address those issues that are not more readily resolved. Effective Partnering is expected to be beneficial to all parties. (CENAP)

-- End of Special Clauses --



THIS PAGE HAS BEEN LEFT INTENTIONALLY BLANK

SECTION 01575

STRUCTURES MONITORING

PART 1 GENERAL

1.1 SCOPE OF SECTION

The work specified in this section consists of furnishing all labor, materials and equipment, and performing all operations required to monitor structures for potential effects of the contract work.

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

NOTE: Any submittals classified as "SD-01 Preconstruction Submittals" are submittals required to be submitted to, and approved by, the office indicated prior to mobilization to the contract work site. All other submittals, classified as "SD-02" through "SD-11," shall be submitted to, and approved or reviewed by, the office indicated prior to commencing the particular task to which the submittal is associated.

SD-01 Preconstruction Submittals

Qualifications; G,DO

The qualifications of the professional engineer, including a copy of their license, proposed to develop and conduct the structure monitoring shall be submitted.

Letter to Owners; G,DO.

The proposed letter to the owners of the monitored structures shall be submitted for approval.

Pre- and Post-Construction Surveys Plan; G,DO.

The Contractor shall submit, for approval, his proposed plan for conducting pre- and post-construction surveys. Included in this plan, but not limited to, shall be: the amount and locations of photographs and video; the type of information that will be noted; and, the method for measuring and recording the location, width and length of existing cracks in the structure.

Pre- and Post-Construction Survey Reports; G,DO.

The Contractor shall submit, for approval, pre- and post-construction survey reports. A separate compact disc (CD), including the report and associated photos shall be provided for each structure.

Structure Monitoring Plan; G,DO.

The Contractor shall submit, for approval, a structures monitoring

plan describing the personnel, materials, equipment and methods to be utilized to monitor the effects of the contract operations on existing structures. In addition, the monitoring plan shall include qualifications of the personnel developing the monitoring plan; qualifications of personnel who shall do the monitoring; frequency of monitoring during each phase of the construction; maximum acceptable vibration level; and contingency plan if that vibration level is approached.

Monitoring Report; G,DO.

The Contractor shall submit, for approval, monitoring reports. Reports of the monitoring shall be submitted the week following the monitoring on compact disks (CD), and include details of where and when the monitoring was performed, the frequency and peak particle velocities of the vibrations, the limiting criteria and any relevant notes.

### 1.3 OBJECTIVE

The Contractor shall monitor structures during this contract for vibration. The objective of this monitoring is to predict and prevent damage to the structures from the Contractor's work operations. Any damage to the structures as a result of the Contractor's work operations shall be the responsibility of the Contractor.

### 1.4 QUALIFICATIONS

A professional engineer with a minimum of 2 current monitoring projects similar in type and scope to this monitoring work, shall develop the proposed monitoring plan.

### 1.5 COORDINATION

After approval of the monitoring plan by the Government and before work begins at the site, the Contractor shall draft a letter to the owners of the all structures, within the monitoring limit, as indicated on the attached photo, to inform them of the methods of construction to be used for this contract, the hours of operation, and the content of the monitoring plan. In addition, the Contractor shall explain to the owners that people may "experience" vibrations at levels much lower than vibration levels that would damage structures. Upon approval of this letter by the Government, the Contractor shall disseminate the letter. The Contractor shall also be required to attend a public meeting which will be coordinated, planned, and conducted by the Government.

### 1.6 PHOTOGRAPHY

All photography shall be conducted as specified under paragraphs 1.3 QUALITY ASSURANCE and 1.4 GENERAL REQUIREMENTS of Section 01320 CONSTRUCTION PHOTOGRAPHY, except the video shall be digital.

## PART 2 PRODUCTS

## PART 3 EXECUTION

### 3.1 DESCRIPTION OF STRUCTURES

The structures to be monitored are a representative sampling of all

structures within an approximate two block area, as shown on the attached sheets. Structures include, but are not limited to, commercial, public and residential buildings, in-ground pools and attached decks. Sheds and detached garages shall not be included in the structures monitoring.

### 3.2 PRE-CONSTRUCTION SURVEY REPORT

The Contractor shall conduct a thorough pre-construction survey of the interior and exterior of all the structures within the monitoring limit shown on the attached photo, including the foundations of the structures. This survey shall include, but shall not be limited to, taking photographs and video of all exterior faces of the structures, recording the type of structures and their construction, recording overall interior and exterior conditions, recording specific interior and exterior distress areas (with closeup photos), including, but not limited to, measuring and recording the location, width, and length of existing interior and exterior cracks.

### 3.3 MONITORING

Monitoring shall include the daily use of a seismograph at representative structures, or portions thereof, within a 500-foot radius of any active work/staging area where stone handling is occurring. The seismographs shall be placed at locations on or in the structures to obtain the highest peak particle velocities. Representative structures shall be defined as one of each type of structure (i.e. residential, public, commercial, in-ground pools, etc.), and, for each structure type, one of each foundation type (pile foundation, masonry, concrete, slab on grade). Not less than three structures per 500-foot radial increment of active work area shall be monitored.

The maximum acceptable vibration level shall be determined from the chart attached at the end of this section, published by the United States Bureau of Mines Report of Investigation 8507, dated 1980. For the Hereford Inlet Lighthouse, a maximum acceptable vibration shall be 0.1 inches per second.

### 3.4 EXCEEDING ACCEPTABLE VIBRATION LEVELS

The Contractor shall not continue any activity that results in peak particle velocities greater than the maximum acceptable vibration level. Should any construction activity impact a structure, the aforementioned engineer will reinspect the structure(s) and report the findings, including digital images, to the Contracting Officer via compact disk no later than one day following the reinspection.

### 3.5 POST-CONSTRUCTION SURVEY

The Contractor shall conduct a thorough post-construction survey of the interior and exterior of all the structures within the monitoring limit shown on the attached photo, including their foundations. This survey shall include, but shall not be limited to, taking photographs and video, recording overall condition, recording specific distress areas including, but not limited to, measuring and recording the location, width, and length of the cracks documented in the pre-construction survey, as well as, any new cracks.

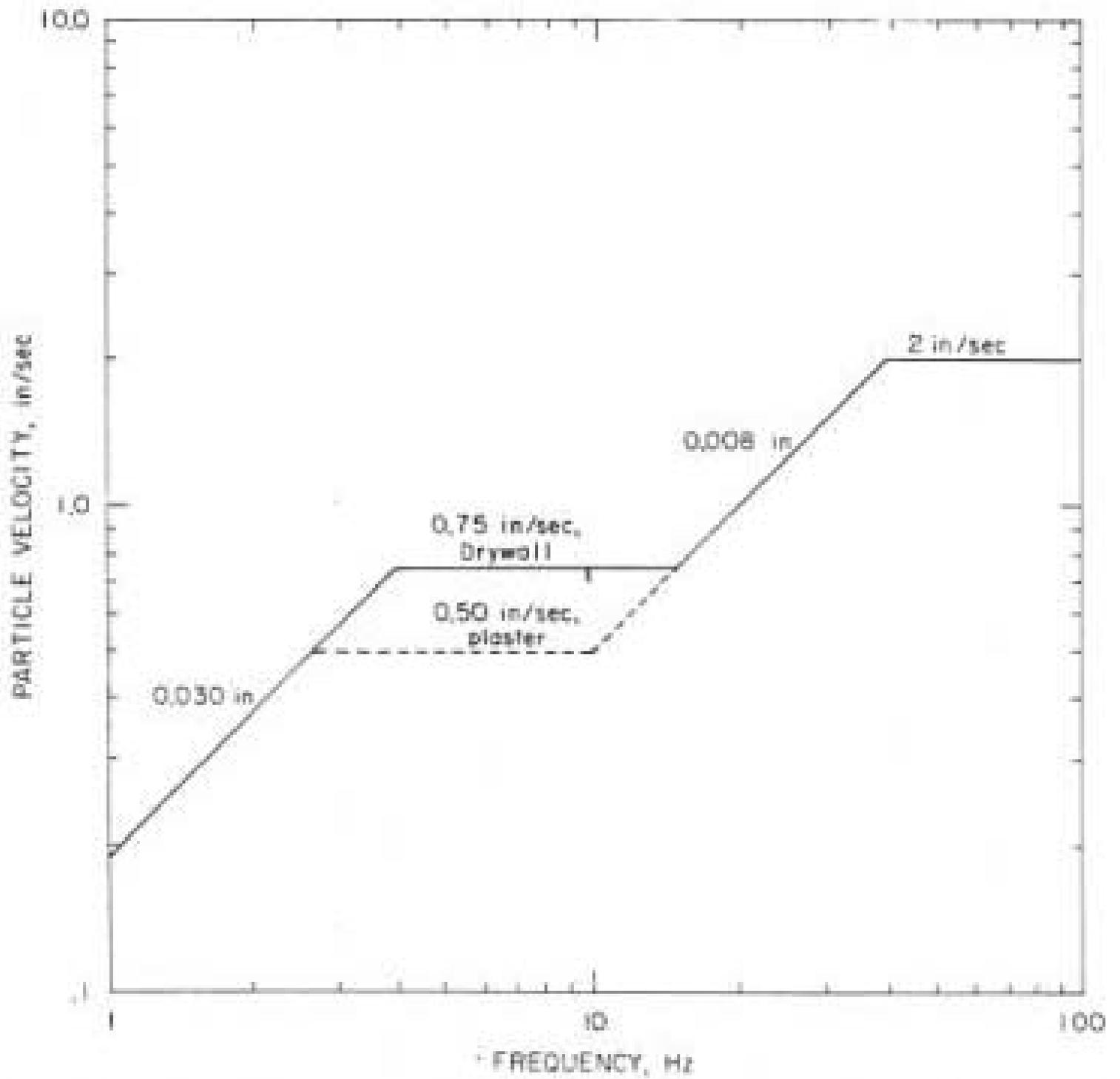
### 3.6 DISPOSAL

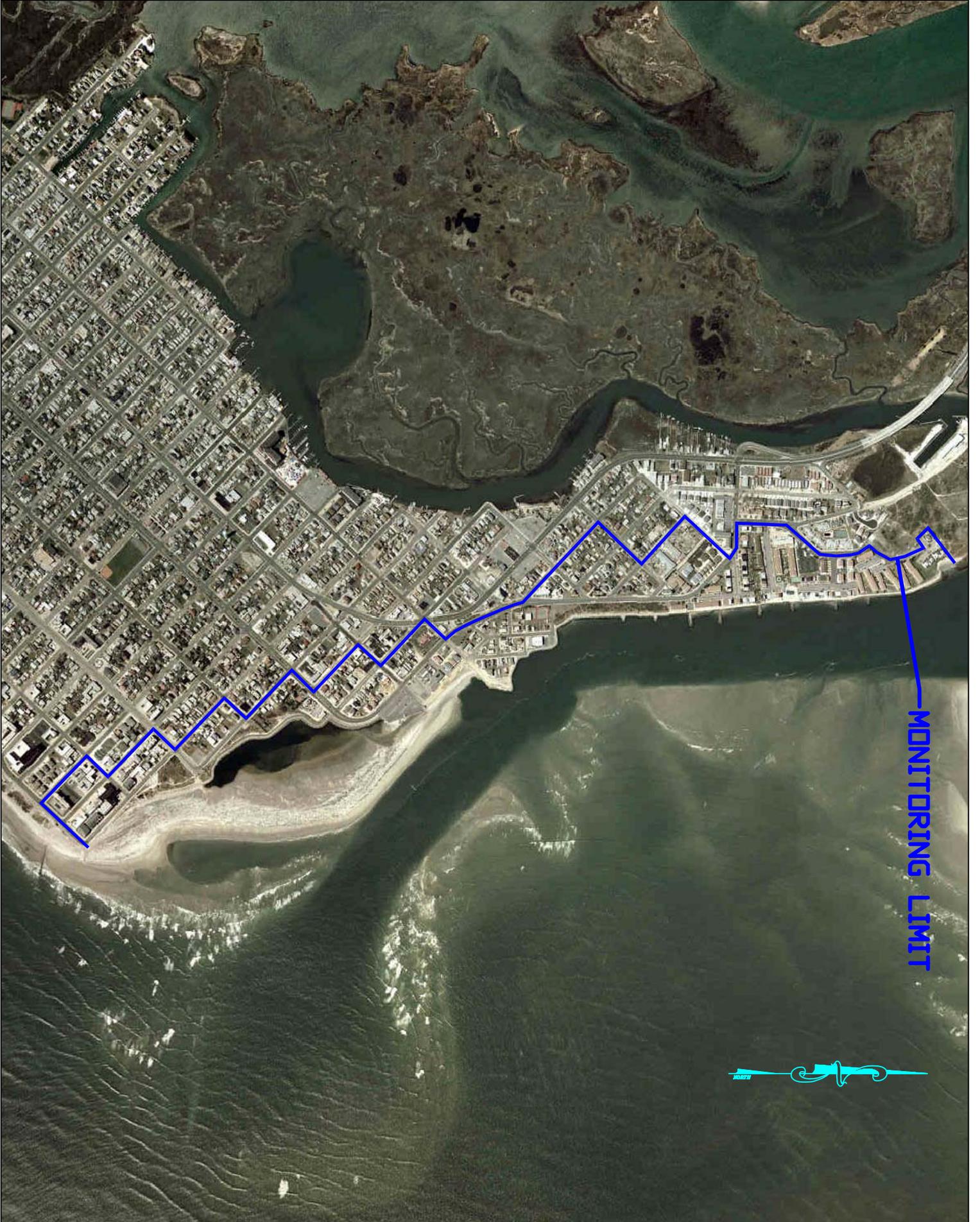
All records of private property, including all photos and images, shall be turned over to the Government, at the end of the contract, to be destroyed.

3.7 MEASUREMENT AND PAYMENT

No separate measurement or payment will be made for the work specified in this section and all costs in connection therewith shall be included in the lump sum price of Base Bid Item No. 11., Option 1 Bid Item No. 19 (if Option 1 is awarded), and, Option 2 Bid Item No. 29 (if Option 2 is awarded), all entitled "Structures Monitoring."

-- End of Section --





MONITORING LIMIT



SECTION 02215

GEOTEXTILE

PART 1 GENERAL

1.1 SCOPE OF SECTION

The work covered by this section consists of furnishing all labor, material and equipment, and performing all operations required for furnishing, hauling, and providing geotextile inside the marine mattresses, and providing it on the underside of the grid/mesh extensions attached to the marine mattresses, as specified herein and as shown on the contract drawings. Also included, is the placement of geotextile under select fill material in the construction of seawall vehicular ramps.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 123	(1996a) Standard Terminology Relating to Textiles
ASTM D 3786	(1987) Hydraulic Bursting Strength of Knitted Goods and Nonwoven Fabrics - Diaphragm Bursting Strength Tester Method
ASTM D 4355	(1999) Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus)
ASTM D 4491	(1999a) Water Permeability of Geotextiles by Permittivity
ASTM D 4533	(1991; R 1996) Trapezoid Tearing Strength of Geotextiles
ASTM D 4632	(1991; R 1997) Grab Breaking Load and Elongation of Geotextiles
ASTM D 4751	(1999a) Determining Apparent Opening Size of a Geotextile
ASTM D 4833	(2000) Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products
ASTM D 4873	(2001) Identification, Storage, and Handling of Geosynthetic Rolls and Samples

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When

used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-04 Samples

Geotextile; G,DO.

If requested by the Contracting Officer, the Contractor shall provide to the Government geotextile samples, for testing to determine compliance with any or all the requirements in this specification. Samples shall be submitted within 5 days of the request. All samples provided shall be from the same production lot as will be supplied for the contract, and shall be the full manufactured width by at least 1 foot. Samples submitted for testing shall be identified by manufacturers lot designation.

SD-07 Certificates

Geotextile; G,DO.

The Contractor shall furnish the Contracting Officer no less than 7 days in advance of delivery of material to the work site, in duplicate, a mill certificate or affidavit signed by a legally authorized official from the company manufacturing the geotextile. The mill certificate or affidavit shall attest that the geotextile meets the chemical, physical and manufacturing requirements stated in these specifications.

1.4 SHIPMENT, HANDLING, AND STORAGE

1.4.1 Shipment

All geotextile shall be labeled, shipped, stored, and handled in accordance with ASTM D 4873 and as specified herein. Each roll shall be wrapped in an opaque and waterproof layer of plastic during shipment and storage. The plastic wrapping shall be placed around the geotextile roll in the manufacturing facility and shall not be removed until deployment. Each roll shall be labeled with the manufacturer's name, geotextile type, lot number, roll number, and roll dimensions (length, width, gross weight). At the time of installation, the geotextile will be rejected if it has defects, rips, holes, flaws, deterioration or damage incurred during manufacture, transportation or storage. Damaged geotextile shall be repaired or replaced at no additional cost to the Government.

1.4.2 Handling

No hooks, tongs, or other sharp instruments shall be used for handling geotextile. Geotextile shall not be dragged along the ground. Any geotextile determined to be damaged as a result of poor handling shall be removed from the site and replaced, at no additional cost to the Government, by additional geotextile meeting the requirements of this specification.

1.4.3 Storage

During all periods of shipment and storage, the geotextile shall be protected from direct sunlight, ultra-violet rays, temperatures in excess 140 degrees F or less if recommended by the manufacturer, mud, dirt, dust

and debris. Geotextiles shall be stored in areas where water cannot accumulate, elevated off the ground, and protected from conditions that will affect the properties or performance of the geotextile.

PART 2 PRODUCTS

2.1 GEOTEXTILE

The geotextile shall be a non-woven pervious sheet of plastic yarn as defined by ASTM D 123. Fibers used in the manufacture of the geotextile shall consist of long-chain synthetic polymer composed of at least 85 percent by weight of polyolefins, polyesters, or polyamides. Stabilizers and/or inhibitors shall be added to the base polymer if necessary to make the filaments resistant to deterioration caused by ultraviolet light and heat exposure. Reclaimed or recycled fibers or polymer shall not be added to the formulation. Geotextile shall be formed into a network such that the filaments or yarns retain dimensional stability relative to each other, including the edges. The edges of the geotextile shall be finished to prevent the outer fiber from pulling away from the geotextile. The geotextile shall be manufactured in a width not less than 12 feet and shall meet the physical requirements indicated below for the particular application.

PHYSICAL REQUIREMENTS		
PROPERTY	TEST METHOD	ACCEPTABLE TEST RESULTS
Unit Weight	ASTM D 5261	10 oz.
Apparent Opening Size (AOS)	ASTM D 4751	U.S. Standard Sieve Nos. 70-100
Geotextile Permittivity	ASTM D 4491	1.2 sec <sup>-1</sup> minimum.
Puncture Strength (Unaged Geotextile)	ASTM D 4833	110 lbs minimum.
Bursting Strength (Unaged Geotextile)	ASTM D 3786	250 psi minimum.
Trapezoidal Tearing Strength (Unaged Geotextile)	ASTM D 4533	80 pounds minimum in any principal direction.
Grab Tensile Strength (Unaged Geotextile)	ASTM D 4632	200 lbs. min. in any principal direction.
Breaking Elongation (Unaged Geotextile)	ASTM D 4632	50% minimum in any principal direction.
Ultraviolet Degradation (Unaged Geotextile)	ASTM D 4355	50% strength retained at 500 hours.
Seam Strength (Unaged Geotextile)	ASTM D 4632	160 lb

Unaged geotextile is defined as geotextile in the condition received from the manufacturer or distributor. AOS is defined as the number of the U.S. Standard Sieve having openings closest in size to the geotextile openings. All numerical values represent minimum average roll values, i.e., any roll in a lot shall meet or exceed the minimum in the table.

### PART 3 EXECUTION

#### 3.1 SCOPE

Geotextile shall be placed inside the marine mattresses and on the underside of the grid/mesh extensions attached to the marine mattresses (in a manner as specified in Section 02390 MARINE MATTRESSES), as indicated on the contract drawings. Geotextile shall also be placed under select fill material in the construction of seawall vehicular ramps.

#### 3.2 INSTALLATION OF GEOTEXTILE FOR MARINE MATTRESSES

See Section 02390 MARINE MATTRESSES for installation of geotextile inside marine mattresses.

#### 3.3 INSTALLATION OF GEOTEXTILE ON GRID/MESH EXTENSIONS ATTACHED TO THE MARINE MATTRESSES

The Contractor shall attach geotextile to the underside of the grid/mesh extensions, which are attached to the marine mattresses, as shown on the contract drawings. In addition, that geotextile shall extend under the marine mattress the required dimension indicated on the contract drawings. The geotextile shall be attached to the underside of the grid/mesh extension and to the underside of the marine mattress in a manner as specified in Section 02390 MARINE MATTRESSES.

#### 3.4 INSTALLATION OF GEOTEXTILE FOR SEAWALL VEHICULAR RAMPS

Geotextile shall be placed under the select fill in the construction of the seawall vehicular ramps.

##### 3.4.1 Surface Preparation

Surface on which the geotextile will be placed shall be prepared to a relatively smooth condition and shall be free of obstructions, depressions, debris, erosion feature, or vegetation. Any irregularities shall be removed so as to insure continuous, intimate contact of the geotextile with all the surface. Any rills, gullies, etc. must be graded out of the surface before geotextile placement.

##### 3.4.2 General Placement

The geotextile shall be placed with the long dimension perpendicular to the groin. The geotextile shall be laid smooth and free of tension, stress, folds, wrinkles or creases. The strips shall be placed to provide a minimum width of 24 inches of overlap for each joint. The placement procedures require that the length of the geotextile be slightly greater than the width of the new ramp. The Contractor shall adjust the actual length of the geotextile used based on initial installation experience. Temporary pinning of the geotextile to help hold it in place until the fill is placed will be allowed. The temporary pins shall be removed as the fill is placed

to relieve high tensile stress which may occur during placement of material on the geotextile. Other appropriate temporary means to prevent movement such as sand bags and stone could also be used.

#### 3.4.3 Filling Against Geotextile

Fill shall be placed over the geotextile as specified in Section 02500 SEAWALL VEHICULAR RAMPS. The geotextile shall be protected from damage during the placement of fill by limiting the height of drop of materials to no greater than 1-foot unless otherwise approved by the Contracting Officer. Any damage to the geotextile during placement of the fill shall be repaired or replaced by the Contractor at his own expense.

#### 3.5 PROTECTION OF GEOTEXTILE DURING CONTRACT OPERATIONS

The geotextile shall be protected from damage during all contract operations. Any damage to the geotextile during its installation shall be replaced by the Contractor at his own expense.

In no case shall any type of equipment be allowed on unprotected geotextile.

Failure to comply with these requirements shall require replacement of the geotextile at the Contractor's expense.

#### 3.6 REPAIR OF DAMAGED GEOTEXTILE

The following procedure shall be performed by the Contractor when repairing damaged sections of the geotextile during or following its installation:

- a. The damaged section of the geotextile shall be cut in a rectangular or square section and removed.
- b. An undamaged piece of geotextile of the same type shall be placed under the original fabric so that its edges over-lap the cut area a minimum of 3 feet in all directions.

Geotextile which cannot be repaired shall be replaced.

#### 3.7 MEASUREMENT AND PAYMENT

##### 3.7.1 Marine Mattresses

The work specified in this section for placing geotextile inside marine mattresses, and, for geotextile attached to the underside of grid/mesh extensions and the mattresses, will not be measured for payment. All costs in connection therewith shall be considered incidental to the marine mattresses and shall be included in the contract unit price for Base Bid Item No. 4., Option 1 Bid Item No. **14** (if Option 1 is awarded), and, Option 2 Bid Item No. **22** (if Option 2 is awarded), all entitled "Marine Mattresses."

##### 3.7.2 Seawall Vehicular Ramps

The work specified in this section for placing geotextile under the select fill material in the construction of the seawall vehicular ramps will not be measured for payment. All costs in connection therewith shall be included in the cost of all bid items.

-- End of Section --

SECTION 02271

SEAWALL CONSTRUCTION

PART 1 GENERAL

1.1 SUMMARY

The work covered by this section consists of furnishing all labor, materials, plant, and equipment, and performing all operations required for construction of the seawall, as specified herein and as shown on the drawings.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 127	(2001) Specific Gravity and Absorption of Coarse Aggregate
ASTM C 131	(1996) Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion in the Los Angeles Machine
ASTM C 295	(1998) Petrographic Examination of Aggregates for Concrete

ENGINEERING MANUALS (EM)

CRD-C-144	(1992) Standard Test Method for Resistance of Rock to Freezing and Thawing
-----------	--

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-05 Design Data

Stone Source and Records; G,DO.

The proposed source of each size of stone specified herein shall be submitted for approval by the Contracting Officer no less than 14 days in advance of delivery of material to the work site.

The test data specified herein for those sources shall be submitted. In the event such data is unavailable, the Contractor shall procure the services of an industry-recognized testing laboratory to perform the required acceptance tests. The results of all acceptance tests shall be furnished to the Contracting Officer at least 30 days prior to the delivery of the stone to the work site. All testing shall be entirely at the Contractor's expense.

The Government will visit the selected quarry(s) to inspect rock quality at least 7 days before any stone delivery to the work site. The Contractor shall have a truck load of each stone type dumped at the quarry.

Plant Slips; G,DO.

The Contractor shall submit to the Contracting Officer, a plant slip indicating the delivery time, plant name and address, the weight of material delivered and the size. The slip shall be signed by the inspector or other designated person at the plant, for each load of stone delivered to the work site, at the time of delivery.

The Contractor's inspector or any other designated person shall physically inspect the delivered stone, separate unsuitable stone and accept the responsibility to replace any quantity of stone rejected by the Government's Inspection Team. If any quantity of unsuitable stone is placed, the Contractor is responsible for removing it and the Contracting Officer shall withhold appropriate (partial) payment.

#### SD-07 Certificates

Qualifications of Contractor; G,COR.

Qualifications of contractor completing the contract work shall be provided.

General Work Plan; G,DO.

The procedures proposed for the accomplishment of the work specified in this section shall be submitted for approval by the Contracting Officer prior to the commencement of the work. The procedures shall provide for safe conduct of the work, careful removal and disposition of materials and protection of property which is to remain undisturbed. The procedures shall include a detailed description of the personnel, materials, equipment, and methods to be used for each operation, including, but not limited to: excavation; transport, handle, store, and place the marine mattresses; and, the transport, handle, store, and place the underlayer and capstone. The work plan shall include a detailed description of personnel, equipment and methods proposed for use when rehandling stone. The work plan shall include the proposed methods to ensure the stability of the existing timber bulkhead in the area where the new structure is to be constructed against that bulkhead. The work plan shall include proposed procedures (and frequency) for verification that contract requirements have been satisfied (including layer thicknesses and horizontal and vertical alignment) by utilization of divers, hydrographic surveys, or

other methods proposed and/or required per these specifications for this purpose. Upon approval of this work plan, the Contractor shall demonstrate the use of the personnel, materials, equipment and methods described in the approved work plan during the completion of required test sections, as specified herein.

Relocation Work Plan; G, DO.

The Contractor shall detail the personnel, equipment, materials and procedures proposed for relocation of the pier.

Deep Water Stabilization Work Plan; G,DO.

The procedures proposed for the accomplishment of the work in the area of the deep water stabilization, as specified in this section, shall be submitted for approval by the Contracting Officer prior to the commencement of the work. The procedures shall provide for safe conduct of the work, careful removal and disposition of materials and protection of property which is to remain undisturbed. The procedures shall include a detailed description of the personnel, materials, equipment, and methods to be used to transport, handle, store, and place the marine mattresses, underlayer stone, and capstone in the deep water stabilization area. The work plan shall include proposed procedures (and frequency) for verification that contract requirements have been satisfied (including underlayer stone layer thicknesses and horizontal and vertical alignment) by utilization of divers, hydrographic surveys, digital side scan/multibeam high-resolution surveys, or other methods proposed and/or required per these specifications for this purpose. Upon approval of this work plan, the Contractor shall demonstrate the use of the personnel, materials, equipment and methods described in the approved work plan during the completion of a required test section in the deep water stabilization area, as specified herein.

#### 1.4 COORDINATION

The Contractor shall provide 72-hour advance notification to the COR prior to commencing the construction of any test section and prior to any diving operations (if required). This advance notification to the COR will serve to facilitate coordination with the Government's various technical and project engineers and safety personnel who will conduct staff inspections.

#### 1.5 STOCKPILE MANAGEMENT

The Contractor shall utilize an identification method for determining the type of stone in each stockpile for use by the field personnel. Each stockpile shall be representative of all stone sizes for a given type of stone, e.g., stone fill, two gradations of underlayer stone, and two weight classes of capstone.

#### 1.6 CONSTRUCTION TOLERANCES

The finished surface shall not deviate from the lines and grades shown by more than the tolerances listed below. Tolerances are measured perpendicular to the indicated lines on the contract drawings. Extreme limits of the tolerances given shall not be continuous in any direction for more than five (5) times the nominal stone dimension nor for an area greater than 200 square feet of the structure surface. NOTE: Neatline as

used herein refers to the lines and grades indicated on the contract drawings.

VERTICAL TOLERANCES

	ABOVE NEATLINE feet	BELOW NEATLINE feet
Station 0+00 - 24+50:		
Capstone	0.5	0.5
Marine Mattresses	0.5	0.5
Station 24+50 - 88+14		
Capstone	0.5	0.5
Marine Mattresses	0.5	0

LATERAL TOLERANCES

	LANDWARD feet	SEAWARD feet
Capstone	0	0
Marine Mattresses	0	0

The intention is that the work shall be built generally to the required elevations, slope and grade and that the outer surfaces shall be even and present a neat appearance. Placed material not meeting these limits shall be removed or reworked as directed by the Contracting Officer. Payment will not be made for excess material which the Contracting Officer permits to remain in place.

1.7 BORING LOGS

Boring logs for the contract are provided on the drawings.

PART 2 PRODUCTS

2.1 STONE FILL

Stone for stone fill shall be a minimum of 3 inches in diameter and a maximum of 9 inches in diameter, reasonably well-graded, and shall meet the quality standards specified below for seawall stone.

2.2 SEAWALL STONE

2.2.1 Quality

The stone shall be sound, durable and of suitable quality to ensure performance in the work and in the climate in which it is to be used. Stone shall be free from cracks, blast fractures, bedding, seams and other defects that would tend to increase its deterioration from natural causes or cause it to break apart due to the stresses caused by handling and placing operations. The stone shall be blocky and angular quarried material, with the least dimension not less than one-third the greatest dimension. Flat slabs, boulders, and parts of boulders will not be acceptable. The stone shall be clean and adequately free from all foreign matter. Any foreign material adhering to or combined with the stone as a result of stockpiling shall be removed prior to placement.

### 2.2.2 Testing

The following test results will be used by the Government to determine the acceptability of the stone selected by the Contractor.

PROPERTY	TEST METHOD	ACCEPTABLE TEST RESULTS
Petrographic	ASTM C 295	Fresh, interlocking, crystalline, with few vugs, no clay minerals and no soluble minerals.
Specific Gravity and Absorption	ASTM C 127	Minimum Unit Weight (dry) of 165 pounds per cubic foot. Absorption less than 1%.
Abrasion Resistance	ASTM C 131	Less than 20% loss for 500 revolutions.
Freezing/Thawing	CRD-C-144	Less than 10% loss for 12 cycles.

Additional testing shall be required if results from the tests, specified above, are close to the limits of acceptability. In the event test reports are not available, as in the case of newly operated sources, the Contractor shall perform such tests as are necessary to determine the acceptability of the stone for use in the work.

### 2.2.3 Acceptance

Approval of a source of stone is not to be construed as approval of all material from that source. The right is reserved to reject materials from certain localized areas, zones, strata, or channels, when such materials are unsuitable for use as determined by the Contracting Officer. The Contracting Officer also reserves the right to reject individual units of produced specified materials in stockpiles at the quarry, all transfer points, and at the project construction site when such materials are determined to be unsuitable. During the contract period, both prior to and after materials are delivered to the job site, visual inspections and measurements of the stone materials may be performed by the Contracting Officer. If the Contracting Officer, during the inspections, finds that the stone quality, gradation or weights of stone being furnished are not as specified or are questionable, re-sampling and re-testing by the Contractor shall be required. Sampling of the delivered stone for testing and the manner in which the testing is to be performed shall be as directed by the Contracting Officer. This additional sampling and testing shall be performed at the Contractor's expense when test results indicate that the materials do not meet specified requirements. When test results indicate that materials meet specified requirements, an equitable adjustment in the contract price will be made for the sampling and testing. Any material rejected shall be removed or disposed of as specified and at the Contractor's expense. The Contractor's Quality Control System Manager shall inspect all stone, for compliance with the contract requirements, prior to the stone leaving the quarry.

#### 2.2.4 Weight Classification of Capstone

The capstone shall consist of weight classes per the following:

Description	Maximum Weight ( $W_{100}$ )	Average Weight ( $W_{50}$ )	Minimum Weight ( $W_0$ )
4 Ton Capstone	5 Tons	4 Tons	3 Tons
2 Ton Capstone	2.5 Tons	2 Tons	1.5 Tons

NOTE: The stone shall be blended at the quarry. Blending at the work site is prohibited. The Contractor shall hand sort the stone received from the quarry if the stone does not meet the minimum sizes, specified above, due to breakage during transportation.

#### 2.2.5 Gradation of Underlayer Stone

The underlayer stone gradations shall be as follows:

Description	Maximum Weight ( $W_{100}$ )	$W_{85}$	Average Weight ( $W_{50}$ )	$W_{15}$	Minimum Weight ( $W_0$ )
Underlayer Stone Under 4 Ton Capstone	1040	940	800	700	560
Underlayer Stone Under 2 Ton Capstone	600	530	400	345	280

The underlayer stone shall be well-graded throughout the construction.

NOTE: The stone shall be blended at the quarry. Blending at the work site is prohibited. The Contractor shall hand sort the stone received from the quarry if the stone does not meet the minimum sizes, specified above, due to breakage during transportation.

### PART 3 EXECUTION

#### 3.1 RESTRICTIONS ON WORK

See Section 01010 SUMMARY OF WORK for restrictions on work.

#### 3.2 REMOVAL OF EXISTING CONCRETE

Existing concrete rubble and debris shall be removed where indicated on the drawings and as necessary to allow proper placement of stone for completion of the construction work. In addition, concrete void filler shall be removed where indicated on the contract drawings. This removal work shall be conducted such that the concrete void filler that falls into, and is not removed from, the structure, is minimized. These materials shall be disposed of offsite at the Contractor's expense.

#### 3.3 PEDESTRIAN CROSSOVERS

Existing pedestrian crossovers, located at approximately Station 47+00 and 52+60, shall require removal and disposal offsite.

### 3.4 REMOVAL OF EXISTING PILES

Where indicated on the contract drawings, existing piles shall be removed. Existing piles, located where existing structure is to remain, shall be removed, at a minimum, to the top of the existing stone. Existing piles, located in areas of rehandling or excavation, shall be removed, at a minimum, to the bottom of the new construction template.

### 3.5 WOOD FISHING PIER

The existing wood fishing pier, located at approximately Station 54+52, shall require relocation in order to construct the new seawall. The Contractor shall remove the pier from the piles, intact, and relocate the structure, intact, to the municipal parking lot, landward of the bulkhead. The Contractor shall remove the existing piles, seaward of the bulkhead to the bottom of excavation, at a minimum. The pier will be reestablished, by others, on new piles in the desired location upon completion of the new seawall.

NOTE: The three lampposts will be removed by others.

### 3.6 TEST SECTIONS

The Contractor shall construct two (2) 100 linear foot test sections and one (1) 50 linear foot test section (if Option 1 is awarded). The test sections shall demonstrate the personnel, equipment, materials, and methods proposed in the approved work plans. The test sections shall be completed in no particular order, however, the Contractor shall not commence work in a particular area until the test section, representative of that particular area, is approved.

The first test section shall demonstrate the personnel, equipment, materials, and methods for completing the work in the deep water stabilization area. The first test section shall be located (approximately) centered on Station 42+18.

The second test section shall demonstrate the personnel, equipment, materials, and methods for completing the work in the areas where there is removal of the existing structure and a new structure is to be constructed. The second test section shall be located (approximately) centered on Station 45+57.

The third test section (to be completed if Option 1 is awarded) shall demonstrate the personnel, equipment, materials, and methods for completing the work in the areas where there is required rehandling of existing stone and the new structure is then constructed over the existing structure. The third test section shall be located (approximately) between Stations 74+00 and 74+50.

### 3.7 EXISTING TIMBER BULKHEAD

A timber bulkhead exists seaward of a steel bulkhead in certain locations along the project. In the locations indicated on the contract drawings, the timber bulkhead shall be cut off at the top of the existing seawall. The materials from this removal operation shall be properly disposed of off site.

### 3.8 EXCAVATION

#### 3.8.1 General

Excavation shall be performed to the lines and grades indicated on the contract drawings. Before and after surveys of the excavation shall be conducted for payment purposes in accordance with the "Measurement and Payment" paragraph below. The Contractor shall not damage or undermine the stability of any existing structures encountered during his excavation operations.

#### 3.8.2 Sand Excavation

The Contractor shall stockpile excavated sand at a location seaward of the structure and above mean high water (MHW) so to prevent the excavated sand from washing back into the excavation or into the inlet or ocean. The Contractor may encounter scattered stones during the sand excavation operations. Any scattered stone encountered while completing these excavation operations may be reused in the construction of the seawall if the stones meet the weight requirements for the stone, as specified herein.

#### 3.8.3 Select Removal of Existing Stone or Concrete Debris

In some areas, existing stone or concrete debris shall be removed only if it protrudes 1 foot or more above the required subgrade of the new structure. The excavated stone may be reused in the construction of the seawall if the stone meets the weight requirements for the stone, as specified herein. The concrete debris shall be properly disposed of offsite. If this required removal of existing stone or concrete debris results in unacceptable depressions into the subgrade, the Contractor shall fill those depressions with either sand or stone fill, as indicated on the contract drawings.

### 3.9 STONE FILL

In the areas where either new marine mattresses or capstone is to be placed directly on existing stone, stone fill shall be placed. The stone fill shall be placed in the voids of the existing structure to provide a reasonably even surface upon which to place either the marine mattresses or the capstone. Rearranging of existing stone may also be required to accomplish an acceptable surface. Compaction of the stone fill is not required. The tolerance on this required surface is detailed on the contract drawings. Subsequent to the placement of stone fill, the surface of the existing structure shall be inspected and approved by the Contracting Officer prior to placement of either the marine mattresses or the capstone. Where stone fill is to be placed underwater, the Contractor shall utilize his equipment to determine the location of unacceptable undulations in the subsurface.

### 3.10 REUSE OF EXISTING STONE

#### 3.10.1 Rehandling Stone

In the areas indicated on the contract drawings, the Contractor shall remove the existing capstone. Upon placement of marine mattress and underlayer stone in these areas, the Contractor may incorporate the existing, removed capstones into the new capstone layer. The existing capstones may be reused as capstone only if the existing capstones meet the weight requirements as specified herein for new capstone. Otherwise, the

Contractor may reuse the existing capstone elsewhere on the project if the stone meets the weight requirements as specified herein for stone fill or underlayer stone. If the existing capstone does not meet any of the weight requirements or the Contractor chooses not to reuse the stone, the Contractor shall dispose of the stone by placing it on the marine mattresses, seaward of the most seaward placed capstone.

### 3.10.2 Reuse Of Excavated Stone

The Contractor may reuse existing scattered stone encountered during excavation operations if the stone meets the weight requirements as specified herein for stone fill, underlayer stone, or capstone. If the stone does not meet any of the weight requirements or the Contractor chooses not to reuse the stone, the Contractor shall dispose of the stone by placing it on the marine mattresses, seaward of the most seaward placed capstone.

### 3.10.3 Reuse of Stone Removed to Extend Existing Stormwater Outfalls

The Contractor may reuse the existing stone removed to extend the existing stormwater outfalls if the stone meets the weight requirements as specified herein for stone fill, underlayer stone, or capstone. If the stone does not meet any of the weight requirements or the Contractor chooses not to reuse the stone, the Contractor shall dispose of the stone by placing it on the marine mattresses, seaward of the most seaward placed capstone.

### 3.10.4 Weighing of Reused Stone for Payment

**For payment purposes, and, to** determine its acceptability for reuse, existing stone shall be weighed by means of a load measuring device, used for weighing during lifting, and mounted on the Contractor's equipment (e.g. a load cell, hanging scale, or crane scale). In addition, a portable scale immediately adjacent to the work may be used. The measuring device and/or scale shall be subject to the approval of the COR. The measuring device and/or scale shall be calibrated, the method of which shall also be subject to the acceptance of the COR. Any stone, based on visual examination, with obvious plans of weakness or discontinuity shall not be reused.

### 3.11 MARINE MATTRESS

The marine mattresses shall be placed, as specified in Section 02390 MARINE MATTRESSES.

### 3.12 CONFIRMATION OF MATTRESSES' LOCATIONS

The Contractor shall not place stone on the marine mattresses until so directed by the Contracting Officer. The Contractor shall submit a diver's report (and digital side scan or multibeam high-resolution survey mosaic (in the area of the deep water stabilization only)) to confirm proper placement of the marine mattresses. Upon review and approval by the Government of those submittals, the Contractor will be directed to proceed with the placement of the stone.

### 3.13 GENERAL GUIDELINES FOR PLACEMENT OF ALL STONE

Stones should not be dropped in loading, transit, or placement on the structure. Stones should be placed on the structure by feeling with the handling equipment to achieve contact when vision is obscured, i.e., below

water, and then released.

The Contractor shall maintain all stone until accepted by the Government and any material displaced by any cause shall be replaced at no additional cost to the Government, to the lines and grades shown on the drawings.

### 3.14 PLACING UNDERLAYER STONE

The stone shall not be dropped onto the mattress from a height greater than one foot. This restriction shall remain in effect during all underlayer stone placement.

In the deep water stabilization area, the Contractor shall place the underlayer stone in 4-foot lifts as the mattress is placed, as indicated on the contract drawings.

### 3.15 PLACING CAPSTONE

The capstone shall be placed in one or two stone layers and shall be placed over the underlayer stone or the existing capstone to the final elevations as shown on the drawings. The stones shall be closely fitted together and interlocked in a staggered pattern to prevent continuous joints in the seawall surface. Extreme limits of the weights given for the capstone A or B shall not be continuous in any direction for more than two (2) times the nominal stone dimension nor for an area greater than 100 square feet of the structure surface. Stones shall be selected for size and shape so that during their placement they will contact each adjacent stone and that upon completion of the work, all stone will be in close contact to assure no independent movement or sliding. The top elevation of the capstone shall be as indicated on the contract drawings. The allowable tolerance on that top elevation, and on the lateral limit of the capstone placement, is as indicated above in the paragraph entitled "Construction Tolerances."

### 3.16 FINAL PLACEMENT OF EXCAVATED SAND

From Station 78+00 to the southern terminus of the project, any sand removed from the top and/or landward side of the seawall shall be restored to preconstruction conditions (including replacing dune grass (see Section 02446 DUNE GRASS AND WOODY VEGETATION)). In this area, any sand excavated to complete the new work, shall be restored to preconstruction dune and beach elevations. Dunes shall be planted with dune grass.

In all other areas, any excess sand, from the excavation required for construction, shall be backfilled, to preconstruction elevations, beginning in the area immediately seaward of the new structure.

Any excess sand shall be placed seaward of the structure and placed to match existing slopes.

### 3.17 STONE FILL BETWEEN STEEL SHEETPILE BULKHEAD AND NEW STRUCTURE

If Option 3 is awarded, the space between the existing steel sheetpile bulkhead and the new structure (the space that existed between the timber and steel bulkheads between Station 16+60 and Station 24+60) shall be filled with underlayer stone (gradation of underlayer stone shall be as required for under 2 ton capstone). The underlayer stone shall be placed to the top of the new seawall crest.

### 3.18 MEASUREMENT AND PAYMENT

#### 3.18.1 Mobilization and Demobilization

All costs connected with the mobilization and demobilization of the Contractor's plant and equipment required for the contract work will be paid for at the contract lump sum prices for these items as listed in the Bid Schedule. Sixty percent (60%) of the lump sum price will be paid to the Contractor upon completion of his mobilization at the work site. The remaining forty percent (40%) will be included in the final payment for work under this contract.

##### 3.18.1.1 Contractor Furnished Cost Data

In the event the Contracting Officer considers that the amount in these items (sixty percent) which represents mobilization, does not bear a reasonable relation to the cost of the work in this contract, the Contracting Officer may require the Contractor to furnish cost data to justify this portion of the price. Failure to justify such price to the satisfaction of the Contracting Officer will result in the payment of actual mobilization costs, as determined by the Contracting Officer, at the completion of mobilization. The payment of the remainder of these items will be included in the final payment under the contract. The determination of the Contracting Officer in these circumstances is not subject to appeal.

##### 3.18.1.2 Mobilization and Demobilization Costs

All costs in connection with the mobilization and demobilization of the Contractor's plant and equipment as defined below shall be included in the contract lump sum price for Base Bid Item No. 1., "Mobilization /Demobilization" as listed in the Bid Schedule.

a. Mobilization shall include all costs for operations accomplished prior to commencement of operations; that is transfer of all plant and equipment to the work site and all other incidentals in advance of work on the project site.

b. Demobilization shall include general preparation for transfer of the plant and equipment to the Contractor's home or standby base, cleanup, and the transfer of plant and equipment to the home or standby base.

#### 3.18.2 Excavation

The work specified in this section for excavation will be measured for payment by the cubic yard. The cubic yardage will be computed by the average end-area method from cross sections taken by a licensed Surveyor, as specified in Section 01720 SURVEY REQUIREMENTS, before and after the excavation. The vertical extent of excavation, for payment purposes, shall be the lines and grades indicated on the contract drawings. The lateral limit of excavation, for payment purposes, shall be the excavation pay limit as indicated on the contract drawings. The Contractor may be required to excavate farther than these vertical and lateral pay limits to complete the work. All costs in connection with this additional excavation will not be measured for payment and shall be considered incidental to the cost of excavating to the vertical and lateral excavation pay limits. All costs in connection therewith shall be included in the contract unit price for Base Bid Item No. 2., Option 1 Bid Item No. **12** (if Option 1 is awarded), and, Option 2 Bid Item No. **20** (if Option 2 is awarded), all entitled "Excavation." These Bid items include the cost to construct and reconstruct

existing dunes.

3.18.3 REHANDLING **AND REUSING EXISTING** STONE

The work specified herein for rehandling **and reusing existing stone will be measured for payment by the ton.** All costs in connection therewith shall be included in the contract unit prices of the items of work to which the work is incidental.

3.18.4 Stone Fill

The work specified in this section for placing stone fill in the voids of the existing stone revetment will be measured for payment by the ton of stone fill from certified weigh tickets. Deductions from those quantities will be made for rejected material. All costs in connection therewith shall be included in the contract unit price for Base Bid Item No. 3., Option 1 Bid Item No. **13** (if Option 1 is awarded), and, Option 2 Bid Item No. **21** (if Option 2 is awarded), all entitled "Stone Fill."

3.18.5 Marine Mattresses

The work specified for providing the marine mattresses will be measured for payment by the square yard of marine mattress satisfactorily placed. All costs, in connection with marine mattresses satisfactorily placed and accepted, shall be included in the contract unit price for Base Bid Item No. 4., Option 1 Bid Item No. **14** (if Option 1 is awarded), and, Option 2 Bid Item No. **22** (if Option 2 is awarded), all entitled "Marine Mattresses." Deductions from those quantities will be made for mattresses placed outside the construction tolerances specified herein. The determination as to whether the mattresses have been satisfactorily placed will be made utilizing the diver's report as specified in Section 01720 SURVEY REQUIREMENTS.

3.18.6 Underlayer Stone Under 4-Ton Capstone

The work specified for providing underlayer stone, under 4-ton capstone, will be measured for payment by the ton from certified weigh tickets. Deductions from those quantities will be made for rejected material. All costs, in connection with the underlayer stone satisfactorily placed and accepted, shall be included in the contract unit price for Base Bid Item No. 5 and Option 2 Bid Item No. **23** (if Option 2 is awarded), entitled "Underlayer Stone Under 4-Ton Capstone."

3.18.7 Underlayer Stone Under 2-Ton Capstone

The work specified for providing underlayer stone, under 2-ton capstone, will be measured for payment by the ton from certified weigh tickets. Deductions from those quantities will be made for rejected material. All costs, in connection with the underlayer stone satisfactorily placed and accepted, shall be included in the contract unit price for Option 2 Bid Item No. **24** (if Option 2 is awarded), entitled "Underlayer Stone Under 2-Ton Capstone."

3.18.8 4-Ton Capstone

The work specified for providing the 4-ton capstone will be measured for payment by the ton from certified weigh tickets. Deductions from those quantities will be made for rejected material. All costs, in connection with the capstone satisfactorily placed and accepted, shall be included in

the contract unit price for Base Bid Item No. 6., Option 1 Bid Item No. **15** (if Option 1 is awarded), and, Option 2 Bid Item No. **25** (if Option 2 is awarded), all entitled "4-Ton Capstone." Deductions from those quantities will be made for capstone placed outside the construction tolerances specified herein.

3.18.9 2-Ton Capstone

The work specified for providing the 2-ton capstone will be measured for payment by the ton from certified weigh tickets. Deductions from those quantities will be made for rejected material. All costs, in connection with the capstone satisfactorily placed and accepted, shall be included in the contract unit price for Option 2 Bid Item No. **26** (if Option 2 is awarded), entitled, "2-Ton Capstone." Deductions from those quantities will be made for capstone placed outside the construction tolerances specified herein.

3.18.10 Deep Water Stabilization Area

3.18.10.1 Deep Water Stabilization Area: Stone Fill

The work specified in this section for placing stone fill in the voids of the existing stone revetment, in the deep water stabilization area, will be measured for payment by the ton of stone fill from certified weigh tickets. Deductions from those quantities will be made for rejected material. All costs in connection therewith shall be included in the contract unit price for Base Bid Item No. 8a. "Deep Water Stabilization Area: Stone Fill."

3.18.10.2 Deep Water Stabilization Area: Marine Mattresses

The work specified for providing the marine mattresses, in the deep water stabilization area, will be measured for payment by the square yard of marine mattress satisfactorily placed. All costs, in connection with marine mattresses satisfactorily placed and accepted, shall be included in the contract unit price for Base Bid Item No. 8b. "Deep Water Stabilization Area: Marine Mattresses." Deductions from those quantities will be made for mattresses placed outside the construction tolerances specified herein. The determination as to whether the mattresses have been satisfactorily placed will be made utilizing the diver's report and the digital side scan or multibeam high-resolution mosaic as specified in Section 01720 SURVEY REQUIREMENTS.

3.18.10.3 Deep Water Stabilization Area: Underlayer Stone

The work specified for providing underlayer stone, under 4-ton capstone, in the deep water stabilization area, will be measured for payment by the ton from certified weigh tickets. Deductions from those quantities will be made for rejected material. All costs, in connection with the underlayer stone satisfactorily placed and accepted, shall be included in the contract unit price for Base Bid Item No. 8c. "Deep Water Stabilization Area: Underlayer Stone."

3.18.10.4 Deep Water Stabilization Area: 4-Ton Capstone

The work specified for providing the 4-ton capstone, in the deep water stabilization area, will be measured for payment by the ton from certified weigh tickets. Deductions from those quantities will be made for rejected material. All costs, in connection with the capstone satisfactorily placed and accepted, shall be included in the contract unit price for Base Bid

Item No. 8d., "Deep Water Stabilization Area: 4-Ton Capstone." Deductions from those quantities will be made for capstone placed outside the construction tolerances specified herein.

3.18.11 Stone Fill Between Steel Sheetpile Bulkhead And New Structure

The work specified for filling the space between the existing steel sheetpile bulkhead and the new structure with underlayer stone will be measured for payment by the ton from certified weigh tickets. Deductions from those quantities will be made for rejected material. All costs, in connection with filling the space with underlayer stone, shall be included in the contract unit price for Option 3, Bid Item No. **30**. "Stone Fill Between Steel Sheetpile Bulkhead And New Structure."

3.18.12 Removal of Concrete Rubble, Debris, and Void Filler

The work specified for the removal and proper disposal of concrete debris, rubble, and void filler will be measured for payment by the ton from certified weigh tickets. All costs, in connection with this work shall be included in the contract unit price for Base Bid Item No. 10 and Option 2, Bid Item No. **28**. "Removal of Concrete Rubble, Debris, and Void Filler."

-- End of Section --

SECTION 02400

STORM WATER OUTFALL PIPE EXTENSIONS

PART 1 GENERAL

1.1 SCOPE OF SECTION

The work covered by this section consists of furnishing all labor, materials, plant and equipment, and performing all operations required for extending existing storm water outfall pipes with concrete encased ductile iron pipe, as specified herein and shown on the drawings.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 564 (1997) Rubber Gaskets for Cast Iron Soil Pipe and Fittings

ASTM C 920 (2002) Elastomeric Joint Sealants

AMERICAN WATER WORKS ASSOCIATION (AWWA)

AWWA C110 (1998) Ductile-Iron and Gray-Iron Fittings, 3 in. Through 48 in. (75 mm Through 1200 mm), for Water

AWWA C111 (2000) Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings

AWWA C151 (1996) Ductile-Iron Pipe, Centrifugally Cast, for Water or Other Liquids

AWWA C600 (1999) Installation of Ductile-Iron Water Mains and Their Appurtenances

AWWA C606 (1997) Grooved and Shouldered Joints

1.3 DELIVERY, STORAGE, AND HANDLING

Materials delivered to the site shall be inspected for damage, unloaded, and stored with a minimum of handling. Materials shall not be stored directly on the ground. The inside of pipes and fittings shall be kept free of dirt and debris. Rubber gaskets and flexible coupling shall be protected from exposure to direct sunlight over extended periods.

Materials shall be handled in such a manner as to insure delivery to the installation location in a sound, undamaged condition. Pipes shall be carried to the installation location, not dragged.

#### 1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. See Section 01330 SUBMITTAL PROCEDURES for all procedures related to the submission of submittals.

The following shall be submitted:

##### SD-03 Product Data

Ductile Iron Pipe and Fittings; G COR. Flexible Coupling; G,COR.

Manufacturer's data and installation instructions shall be submitted to the Contracting Officer, for the ductile iron pipe and flexible pipe coupling, prior to installation.

##### SD-07 Certificates

Detailed Work Plan; G DO.

The Contractor shall submit to the Contracting Officer, for approval, prior to performing the work associated with extension of the stormwater outfalls, a detailed work plan for transporting and storing the materials, constructing the concrete encasement, installing the pipes, and welding the bars to the flanged end section, as specified in this section and as shown on the contract drawings.

Ductile Iron Pipe and Fittings. Flexible Coupling and Clamps; G,COR.

Statement signed by an official authorized to certify on behalf of the manufacturer of a product, system or material, attesting that the product, system or material meets specified requirements. The statement must be dated after the award of the contract, must state the Contractor's name and address, must name the project and location, and must list the specific requirements which are being certified.

#### PART 2 PRODUCTS

##### 2.1 DUCTILE-IRON PIPE

Ductile iron pipes shall be Class 50 with push-on type joints, conforming to AWWA C151 and AWWA C110 respectively. Rubber gaskets and lubricant shall conform to AWWA C111 and the pipe manufacturer's recommendations. Flanged end section shall also be Class 50 pipe.

##### 2.2 FLEXIBLE PIPE COUPLING

Flexible pipe coupling shall be a sleeve-type, made of elastomeric polyvinyl chloride (PVC) and designed to fit the outside diameters of the existing ductile iron pipe and the new ductile iron pipe. Coupling shall meet the applicable requirements of ASTM C 564 and shall be furnished with stainless steel clamps as shown on the drawings for compression of the coupling to the pipes. Coupling material shall include an ultraviolet

sunscreen and a fungicide preventative and shall be resistant to ozone.

#### 2.2.1 Elastomeric Sealant

Elastomeric sealant shall be a 2-component, premium grade, polyurethane-base in accordance with ASTM C 920. Sealant primer and surface conditions shall be in accordance with the sealant manufacturer's recommendation. Sealant is intended for sealing joints exceeding 1/2 inches in depth.

#### 2.3 CONCRETE

Unless otherwise specified, concrete and reinforced concrete shall conform to the requirements for 4000 psi concrete under Section 03300 CONCRETE.

### PART 3 EXECUTION

#### 3.1 GENERAL

The Contractor shall establish and maintain the drainage of the existing outfall pipes at all times throughout the entire contract. The outfall extensions shall be encased in concrete as indicated on the contract drawings.

#### 3.2 JOINING EXISTING PIPE TO NEW PIPE

A flexible coupling shall be utilized to join existing pipe to new pipe as shown on the contract drawings. Prior to installing the flexible coupling, the new and existing pipes shall be cleaned to produce a surface that is free of dirt, dust, loose rust or loose mill scale. Installation of the flexible coupling and torquing of clamps shall be in accordance with the coupling manufacturer's instructions. Elastomeric sealant shall be used to seal the coupling as shown on the contract drawings.

#### 3.3 CONCRETE

Concrete shall be placed as specified in Section 03300 CONCRETE.

#### 3.4 CUTTING OF PIPE

Unless otherwise recommended by the manufacturer and authorized by the Contracting Officer, cutting shall be done with an approved type mechanical cutter.

#### 3.5 JOINTING

Push-on type joints shall be installed in accordance with AWWA C600 for buried lines or AWWA C606 above ground. Rubber gaskets shall be handled, lubricated where necessary, and installed in accordance with the pipe manufacturer's recommendations.

#### 3.6 FLANGED END SECTION AND SCREEN

A flanged end section shall be installed at the end of each outfall extension as indicated on the contract drawings. Bar reinforcement shall be welded to the end of these flanged sections to act as a screen.

3.7 MEASUREMENT AND PAYMENT

The work specified in this section for the extension of the outfalls will not be measured for payment. All costs in connection therewith shall be included in the contract lump sum price for Base Bid Item No. 9., Option 1 Bid Item No. **17** (if Option 1 is awarded), and, Option 2 Bid Item No. **27** (if Option 2 is awarded), all entitled "Outfall Extensions." Option 1 Bid Item No. **17** (if Option 1 is awarded) includes the cost to remove excess pipe supports and pipe and to build around the pipe with stone and slush concrete, as indicated on the contract drawings.

-- End of Section --

SECTION 02446

DUNE GRASS AND WOODY VEGETATION

PART 1 GENERAL

1.1 SCOPE OF SECTION

The work covered by this section consists of furnishing all labor, materials, and equipment, and performing all operations required for the planting and seeding of dune grass, as specified herein and shown on the drawings.

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-07 Certificates

Dune Grass Plants and Seed; G,DO.

Statement signed by an official authorized to certify on behalf of the manufacturer of a product, system or material, attesting that the product, system or material meets specified requirements. The statement must be dated after the award of the contract, must state the Contractor's name and address, must name the project and location, and must list the specific requirements which are being certified.

PART 2 PRODUCTS

2.1 DUNE GRASS

2.1.1 Plants

Plants shall be the Cape variety of American Beachgrass (*Ammophila breviligulata*). Each plant shall consist of two or more healthy culms. Plants which are damaged will not be accepted.

2.1.2 Seed

Seed shall be the Atlantic variety of coastal panicgrass (*Panicum amarum*).

2.1.3 Fertilizer

Fertilizer shall be 10-10-10 grade. Fertilizer shall be uniform in composition, free-flowing, and suitable for application with approved equipment.

2.2 WOODY VEGETATION

Woody vegetation shall be the species existing in the location including, but not limited to, bayberry and wax myrtle.

PART 3 EXECUTION

3.1 DUNE GRASS

3.1.1 General

Constructed and reconstructed dunes shall be fertilized, planted, and seeded with beachgrass and panicgrass. In addition, any other areas, where dune grass existed and is disturbed by the Contractor's operations, shall be fertilized, planted, and seeded with beachgrass and panicgrass.

3.1.2 Surface Preparation

All surfaces to be planted shall be graded with no sharp depressions greater than 2 inches in depth. All compacted areas shall be scarified to a depth of 3 inches prior to planting.

3.1.3 Planting Method

3.1.3.1 Beachgrass

One beachgrass plant shall be planted per hole. The plants shall be spaced 18 inches apart within a row and rows shall be spaced 18 inches apart. The ends of rows shall be staggered 9 inches. The dune grass shall be planted in 8-9" deep holes. Fertilizer shall be applied at 400 pounds per acre, 30 days after planting, but no earlier than April 1.

3.1.3.2 Panicgrass

The dunes shall subsequently be over seeded into the stands of American beachgrass with panicgrass from the centerline of the dune to the landside dune toe. The panicgrass shall be seeded at a rate of 8 - 12 pounds of seed per acre. Seeds shall be planted 1.5 to 2 inches deep either by hand or by a mechanically operated drill or seeder.

3.1.4 Planting Season

Beachgrass shall only be planted between 15 October and 1 April, under nonfrozen soil conditions. Panicgrass seeds shall only be planted between 1 November and 15 April.

3.1.5 Care and Protection

The Contractor shall be responsible for proper care and protection of all planted areas. At least 80% plant survival is required in areas at the end of the first growing season. Areas having less than an 80% survival rate shall be replanted and fertilized by the Contractor.

3.2 WOODY VEGETATION

Wooded vegetation shall be planted where woody vegetation is disturbed due to the contract work or the Contractor's operations. Specifically, the Contractor shall restore the woody vegetation in the staging area located at approximately Station 34+00.

3.3 MEASUREMENT AND PAYMENT

3.3.1 Dune Grass

The work specified in this section for planting and seeding of dune grass will not be measured for payment. Payment for this work will be made at the contract lump sum price for "Dune Grass", Option 1 Item No. **18**.

3.3.2 Woody Vegetation

The work specified in this section for planting woody vegetation will not be measured separately for payment and all costs in connection therewith will be included in the cost of all the Bid items.

-- End of Section --

THIS PAGE HAS BEEN LEFT INTENTIONALLY BLANK

SECTION 03300

CONCRETE

PART 1 GENERAL

1.1 SCOPE OF SECTION

The work covered by this section consists of furnishing all labor, materials, plant and equipment, and performing all operations required for placing concrete to construct a concrete cap on top of the new seawall, and, to encase new stormwater outfall extensions, as specified herein and shown on the drawings.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ACI INTERNATIONAL (ACI)

ACI 308	(1992; R 1997) Standard Practice for Curing Concrete
ACI 318/318R	(1999) Building Code Requirements for Structural Concrete and Commentary
ACI 347R	(1994; R 1999) Guide to Formwork for Concrete

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 185	(1997) Steel Welded Wire Fabric, Plain, for Concrete Reinforcement
ASTM A 615/A 615M	(2000) Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
ASTM C 143/C 143M	(2000) Slump of Hydraulic Cement Concrete
ASTM C 150	(1999a) Portland Cement
ASTM C 171	(1997a) Sheet Materials for Curing Concrete
ASTM C 172	(1999) Sampling Freshly Mixed Concrete
ASTM C 231	(1997e1) Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C 260	(2000) Air-Entraining Admixtures for Concrete
ASTM C 309	(1998a) Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C 31/C 31M	(2000e1) Making and Curing Concrete Test Specimens in the Field

ASTM C 33	(1999ae1) Concrete Aggregates
ASTM C 39/C 39M	(2001) Compressive Strength of Cylindrical Concrete Specimens
ASTM C 494/C 494M	(1999ae1) Chemical Admixtures for Concrete
ASTM C 618	(2000) Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete
ASTM C 94/C 94M	(2000e2) Ready-Mixed Concrete
ASTM D 98	(1998) Calcium Chloride

ENGINEERING MANUALS (EM)

COE CRD-C 400	(1963) Requirements for Water for Use in Mixing or Curing Concrete
---------------	--

NEW JERSEY DEPARTMENT OF TRANSPORTATION (NJDOT)

NJDOT Specifications	(2000 Edition) Standard Specifications for Road and Bridge Construction
----------------------	---

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-07 Certificates

Concrete; G,COR

Certificates of compliance attesting that the concrete materials meet the requirements of the specifications shall be submitted in accordance with the Special Clause "CERTIFICATES OF COMPLIANCE".

Preformed Expansion Joint Filler; G,DO.

Certificates of compliance stating that the joint filler conforms to the requirements specified.

Detailed Work Plan for Concrete Cap; G,DO.

The Contractor shall submit a work plan that includes a detailed description of personnel, equipment, materials, and methods to be utilized to construct the concrete cap.

Detailed Work Plan for Outfall Extensions; G,DO.

The Contractor shall submit a work plan, as specified in Section 02400 STORMWATER OUTFALL PIPE EXTENSIONS, that includes description of personnel, equipment, materials, and methods to be

utilized to construct the concrete encasement of the outfall extensions and the physical bond breaker utilized.

#### 1.4 DESIGN AND PERFORMANCE REQUIREMENTS

Concrete will be sampled in accordance with ASTM C 172. Slump and air content will be determined in accordance with ASTM C 143/C 143M and ASTM C 231, respectively, when cylinders are molded. Compression test specimens will be made, cured, and transported in accordance with ASTM C 31/C 31M. Compression test specimens will be tested in accordance with ASTM C 39/C 39M.

Samples for strength tests will be taken not less than once each shift in which concrete is produced. A minimum of three specimens will be made from each sample; two will be tested at 28 days (90 days if pozzolan is used) for acceptance, and one will be tested at 7 days for information.

##### 1.4.1 Strength

Acceptance test results will be the average strengths of two specimens tested at 28 days (90 days if pozzolan is used). The strength of the concrete will be considered satisfactory so long as the average of three consecutive acceptance test results equal or exceed the specified compressive strength,  $f'c$ , and no individual acceptance test result falls below  $f'c$  by more than 500 psi.

##### 1.4.2 Construction Tolerances

A Class "C" finish shall apply to all surfaces. The surface requirements for the classes of finish required shall be as specified in ACI 347R.

##### 1.4.3 Concrete Mixture Proportions

Concrete mixture proportions shall be the responsibility of the Contractor.

Mixture proportions shall include the dry weights of cementitious material(s); the nominal maximum size of the coarse aggregate; the specific gravities, absorptions, and saturated surface-dry weights of fine and coarse aggregates; the quantities, types, and names of admixtures; and quantity of water per cubic yard of concrete. All materials included in the mixture proportions shall be of the same type and from the same source as will be used on the project. Specified compressive strength  $f'c$  shall be 4000 psi at 28 days (90 days if pozzolan is used). The maximum nominal size coarse aggregate shall be 1 inch, in accordance with ACI 318/318R. The air content shall be between 4 and 7 percent. The slump shall be between 2 and 4 inches. The maximum water cement ratio shall be 0.45.

## PART 2 PRODUCTS

### 2.1 CEMENTITIOUS MATERIALS

Cementitious materials shall conform to the appropriate specifications listed:

#### 2.1.1 Portland Cement

ASTM C 150, Type II.

#### 2.1.2 Pozzolan

Pozzolan shall conform to ASTM C 618, Class C or F, including requirements of Tables 1A and 2A.

## 2.2 AGGREGATES

Aggregates shall meet the quality and grading requirements of ASTM C 33 Class Designations 4M or better.

## 2.3 ADMIXTURES

Admixtures to be used, when required or approved, shall comply with the appropriate specification listed. Chemical admixtures that have been in storage at the project site for longer than 6 months or that have been subjected to freezing shall be retested at the expense of the contractor at the request of the Contracting Officer and shall be rejected if test results are not satisfactory.

### 2.3.1 Air-Entraining Admixture

Air-entraining admixture shall meet the requirements of ASTM C 260.

### 2.3.2 Accelerating Admixture

Calcium chloride shall meet the requirements of ASTM D 98. Other accelerators shall meet the requirements of ASTM C 494/C 494M, Type C or E.

### 2.3.3 Water-Reducing or Retarding Admixture

Water-reducing or retarding admixture shall meet the requirements of ASTM C 494/C 494M, Type A, B, or D. High-range water reducing admixture Type F or G may be used only when approved, approval being contingent upon particular placement requirements as described in the Contractor's Quality Control Plan.

## 2.4 WATER

Water for mixing and curing shall be fresh, clean, potable, and free from injurious amounts of oil, acid, salt, or alkali, except that unpotable water may be used if it meets the requirements of COE CRD-C 400.

## 2.5 REINFORCING STEEL

Reinforcing steel bar shall conform to the requirements of ASTM A 615/A 615M, Grade 60. Welded steel wire fabric shall conform to the requirements of ASTM A 185. Details of reinforcement not shown shall be in accordance with ACI 318/318R, Chapters 7 and 12.

## 2.6 FORMWORK

The design and engineering of the formwork as well as its construction, shall be the responsibility of the Contractor.

## 2.7 CURING MATERIALS

Curing materials shall conform to the following requirements.

### 2.7.1 Impervious Sheet Materials

Impervious sheet materials, ASTM C 171, type optional, except polyethylene film, if used, shall be white opaque.

### 2.7.2 Membrane-Forming Curing Compound

ASTM C 309, Type 1-D or 2, Class A.

### 2.8 PREFORMED EXPANSION JOINT FILLER

Preformed fillers for expansion joints shall conform to Subsection 908.01 of the NJDOT Specifications.

### 2.9 JOINT SEALER

Joint sealer shall be cold-applied conforming to Subsection 908.02 of the NJDOT Specifications.

## PART 3 EXECUTION

### 3.1 GENERAL

The Contractor shall construct the concrete cap and encase the new stormwater outfall extensions in the locations and to the extent indicated on the contract drawings. In the case of the outfall extensions, the Contractor shall utilize some type of physical bond breaker, e.g., forms left in place, etc. to prevent movement of the surrounding stone from affecting the concrete encasement.

### 3.2 CONCRETE ENCASEMENT OF OUTFALL EXTENSIONS

#### 3.2.1 Embedded Items

Reinforcement shall be secured in place. The concrete covering over steel reinforcing shall not be less than 3 inches thick. Internal ties shall be arranged so that when the forms are removed the metal part of the tie will be not less than 2 inches from concrete surfaces permanently exposed to view or exposed to water on the finished structures. Embedded items shall be free of oil and other foreign matters such as loose coatings or rust, paint, and scale. The embedding of wood in concrete will be permitted only when specifically authorized or directed. All equipment needed to place, consolidate, protect, and cure the concrete shall be at the placement site and in good operating condition.

#### 3.2.2 Formwork Installation

Forms shall be properly aligned, adequately supported, and mortar-tight. The form surfaces shall be smooth and free from irregularities, dents, sags, or holes when used for permanently exposed faces. All exposed joints and edges shall be chamfered, unless otherwise indicated.

#### 3.2.3 Form Removal

Forms may be used as a physical bond breaker and are not required to be removed. If removed, supporting forms and shoring shall not be removed until the concrete has cured for at least 5 days.

### 3.3 CONSTRUCTION OF CONCRETE CAP

The Contractor shall utilize some method, e.g. grout bags, to choke off the voids in the structure to allow for construction of the concrete cap. The Contractor shall not leave forms in place.

### 3.4 PRODUCTION OF CONCRETE

#### 3.4.1 Ready-Mixed Concrete

Ready-mixed concrete shall conform to ASTM C 94/C 94M except as otherwise specified.

### 3.5 CONVEYING AND PLACING CONCRETE

Conveying and placing concrete shall conform to the following requirements.

#### 3.5.1 General

Concrete placement shall not be permitted when weather conditions prevent proper placement and consolidation without approval. When concrete is mixed and/or transported by a truck mixer, the concrete shall be delivered to the site of the work and discharge shall be completed within 1-1/2 hours or 45 minutes when the placing temperature is 85 degrees F or greater unless a retarding admixture is used. Concrete shall be conveyed from the mixer to the forms as rapidly as practicable by methods which prevent segregation or loss of ingredients. Concrete shall be in place and consolidated within 15 minutes after discharge from the mixer. Concrete shall be deposited as close as possible to its final position in the forms and be so regulated that it may be effectively consolidated in horizontal layers 18 inches or less in thickness with a minimum of lateral movement. The placement shall be carried on at such a rate that the formation of cold joints will be prevented.

#### 3.5.2 Placement by Pump

Concrete may be conveyed by positive displacement pump when approved. The pumping equipment shall be piston or squeeze pressure type; pneumatic placing equipment shall not be used. The pipeline shall be rigid steel pipe or heavy-duty flexible hose. The inside diameter of the pipe shall be at least 3 times the nominal maximum-size coarse aggregate in the concrete mixture to be pumped but not less than 4 inches. Aluminum pipe shall not be used. The nominal maximum-size coarse aggregate shall not be reduced to accommodate the pumps. The distance to be pumped shall not exceed limits recommended by the pump manufacturer. The concrete shall be supplied to the concrete pump continuously. When pumping is completed, concrete remaining in the pipeline shall be ejected without contamination of concrete in place. After each operation, equipment shall be thoroughly cleaned, and flushing water shall be wasted outside of the forms. Grout used to lubricate the pumping equipment at the beginning of the placement will not be incorporated into the placement.

#### 3.5.3 Consolidation

Each layer of concrete shall be consolidated by rodding, spading, or internal vibrating equipment. Internal vibration shall be systematically accomplished by inserting the vibrator through the fresh concrete in the layer below at a uniform spacing over the entire area of placement. The distance between insertions shall be approximately 1.5 times the radius of action of the vibrator and overlay the adjacent, just-vibrated area by a few inches. The vibrator shall penetrate rapidly to the bottom of the layer and at least 6 inches into the layer below, if such a layer exists. It shall be held stationary until the concrete is consolidated and then withdrawn slowly at the rate of about 3 inches per second.

#### 3.5.4 Cold-Weather Requirements

No concrete placement shall be made when the ambient temperature is below 35 degrees F or if the ambient temperature is below 40 degrees F and falling. Suitable covering and other means as approved shall be provided for maintaining the concrete at a temperature of at least 50 degrees F for not less than 72 hours after placing and at a temperature above freezing for the remainder of the curing period. Salt, chemicals, or other foreign materials shall not be mixed with the concrete to prevent freezing. Any concrete damaged by freezing shall be removed and replaced at the expense of the contractor.

#### 3.5.5 Hot-Weather Requirements

When the rate of evaporation of surface moisture, as determined by use of Figure 1 of ACI 308, is expected to exceed 0.2 pound per square foot per hour, provisions for windbreaks, shading, fog spraying, or covering with a light-colored material shall be made in advance of placement, and such protective measures shall be taken as quickly as finishing operations will allow.

### 3.6 FINISHING

#### 3.6.1 General

No finishing or repair will be done when either the concrete or the ambient temperature is below 50 degrees F.

#### 3.6.2 Finishing Formed Surfaces

All fins and loose materials shall be removed, and surface defects including tie holes shall be filled. All honeycomb areas and other defects shall be repaired. All unsound concrete shall be removed from areas to be repaired. Surface defects greater than 1/2 inch in diameter and holes left by removal of tie rods in all surfaces not to receive additional concrete shall be reamed or chipped and filled with dry-pack mortar. The prepared area shall be brush-coated with an approved epoxy resin or latex bonding compound or with a neat cement grout after dampening and filled with mortar or concrete. The cement used in mortar or concrete for repairs to all surfaces permanently exposed to view shall be a blend of portland cement and white cement so that the final color when cured will be the same as adjacent concrete.

#### 3.6.3 Finishing Unformed Surfaces

All unformed surfaces shall be float finished to elevations shown, unless otherwise specified. Unformed surfaces shall be finished to a tolerance of 3/8 inch as determined by a 10 foot straightedge placed on surfaces shown on the plans to be level or having a constant slope. Finishing shall not be performed while there is excess moisture or bleeding water on the surface. No water or cement shall be added to the surface during finishing.

##### 3.6.3.1 Float Finish

Surfaces to be float finished shall be screeded and darried or bullfloated to eliminate the ridges and to fill in the voids left by the screed. In addition, the darby or bullfloat shall fill all surface voids and only slightly embed the coarse aggregate below the surface of the fresh

concrete. When the water sheen disappears and the concrete will support a person's weight without deep imprint, floating should be completed. Floating should embed large aggregates just beneath the surface, remove slight imperfections, humps, and voids to produce a plane surface, compact the concrete, and consolidate mortar at the surface.

#### 3.6.3.2 Broom Finish

A broom finish shall be applied to the concrete cap. The concrete shall be screeded and floated to required finish plane with no coarse aggregate visible. After surface moisture disappears, the surface shall be broomed or brushed with a broom or fiber bristle brush in a direction transverse to that of the main traffic or as directed.

#### 3.6.4 Expansion Joints

Expansion joints shall be spaced every 15 linear feet, measured along landward edge of crest, and at every change in alignment. Preformed expansion joint filler shall be used in all expansion joints in the cap. The filler shall extend the height indicated on the contract drawings. The edges of the joint shall be neatly finished with an edging tool and chamfered as shown on the drawings.

#### 3.7 CURING AND PROTECTION

Beginning immediately after placement and continuing for at least 7 days, all concrete shall be cured and protected from premature drying, extremes in temperature, rapid temperature change, freezing, mechanical damage, and exposure to rain or flowing water. All materials and equipment needed for adequate curing and protection shall be available and at the site of the placement prior to the start of concrete placement. Preservation of moisture for concrete surfaces not in contact with forms shall be accomplished by one of the following methods:

- a. Continuous sprinkling or ponding.
- b. Application of absorptive mats or fabrics kept continuously wet.
- c. Application of sand kept continuously wet.
- d. Application of impervious sheet material.
- e. Application of membrane-forming curing compound, Type 1-D, on surfaces permanently exposed to view and Type 2 on other surfaces shall be accomplished in accordance with manufacturer's instructions.

The preservation of moisture for concrete surfaces placed against wooden forms shall be accomplished by keeping the forms continuously wet for 7 days. If forms are removed prior to end of the required curing period, other curing methods shall be used for the balance of the curing period. During the period of protection removal, the temperature of the air in contact with the concrete shall not be allowed to drop more than 25 degrees F within a 24 hour period.

#### 3.8 PLACING STONE AGAINST NEW CONCRETE

Stone shall not be placed against new concrete until inspected and approved by the COR.

### 3.9 TESTS AND INSPECTIONS

#### 3.9.1 General

The individuals who sample and test concrete as required in this specification shall have demonstrated a knowledge and ability to perform the necessary test procedures equivalent to the ACI minimum guidelines for certification of Concrete Field Testing Technicians, Grade I.

#### 3.9.2 Inspection Details and Frequency of Testing

##### 3.9.2.1 Slump

Slump shall be checked once during each shift that concrete is produced. Samples shall be obtained in accordance with ASTM C 172 and tested in accordance with ASTM C 143/C 143M.

##### 3.9.2.2 Consolidation and Protection

The Contractor shall ensure that the concrete is properly consolidated, finished, protected, and cured.

### 3.10 MEASUREMENT AND PAYMENT

#### 3.10.1 Encasement of Stormwater Outfall Extensions

The work specified herein for encasement of the outfall extensions will not be measured for payment. All costs in connection therewith shall be included in the contract lump sum price for Base Bid Item No. 9., Option 1 Bid Item No. **17** (if Option 1 is awarded), and, Option 2 Bid Item No. **27** (if Option 2 is awarded), all entitled "Outfall Extensions."

#### 3.10.2 Concrete Cap

The work specified herein for construction of the concrete cap will be by the cubic yard of concrete in place. All costs in connection therewith shall be included in the contract unit price for Base Bid Item No. 7. and Option 1 Bid Item No. **16** (if Option 1 is awarded), entitled "Concrete Cap."

-- End of Section --