

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT			1. CONTRACT ID CODE	PAGE OF PAGES	
			J	1	2
2. AMENDMENT/MODIFICATION NO. 0001	3. EFFECTIVE DATE 01-Sep-2004	4. REQUISITION/PURCHASE REQ. NO. W25PHS-4063-7539		5. PROJECT NO. (If applicable)	
6. ISSUED BY US ARMY ENGINEER DISTRICT, CONTRACTING DIVISION WANAMAKER BUILDING 100 PENN SQUARE EAST PHILADELPHIA PA 19107-3390	CODE W912BU	7. ADMINISTERED BY (If other than item 6) See Item 6		CODE	
8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)			X	9A. AMENDMENT OF SOLICITATION NO. W912BU-04-B-0015	
			X	9B. DATED (SEE ITEM 11) 16-Aug-2004	
				10A. MOD. OF CONTRACT/ORDER NO.	
				10B. DATED (SEE ITEM 13)	
CODE	FACILITY CODE		11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS		
<input checked="" type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer <input type="checkbox"/> is extended, <input checked="" type="checkbox"/> is not extended.					
Offer 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 _____ 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) BEACHFILL, DELAWARE COAST FROM CAPE HENLOPEN TO FENWICK ISLAND, FENWICK ISLAND, DELAWARE					
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 <input type="checkbox"/> is not, <input type="checkbox"/> 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 BID OPENING DATE OF TUESDAY, SEPTEMBER 14, 2004 AT 2:00 P.M. (CONTINUED ON NEXT PAGE)					
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)		
			TEL: _____ EMAIL: _____		
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: Section 00010, Page 3 - Please delete page 00010-3 in its entirety and substitute the revised page of the same number, annotated Amendment No. 0001, 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. 0001, attached hereto.

c. TECHNICAL SPECIFICATIONS:

NOTE: The following sections were amended. For simplicity, the complete section is being reissued to enable complete substitution/insertion of the section in existing hard copies. To make detection of changes easier, only those pages with changes on them are annotated with "Amendment No. 0001" in the upper right corner. In addition, changes on a page are highlighted in ***bold italics***.

(1) Section 01010 - SUMMARY OF WORK: Please delete this section in its entirety and substitute the revised section of the same number, annotated Amendment No. 0001, attached hereto.

(2) Section 01330 - SUBMITTAL PROCEDURES: Please delete page 11 of this section and substitute the revised page of the same number, annotated Amendment No. 0001, attached hereto.

(3) Section 01720 - SURVEY REQUIREMENTS: Please delete this section in its entirety and substitute the revised section of the same number, annotated Amendment No. 0001, 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. 0001, attached hereto.

(5) Section 02390 - BEACHFILL: Please delete this section in its entirety and substitute the revised section of the same number, annotated Amendment No. 0001, attached hereto.

(6) Section 02446 - SAND FENCE AND DUNE GRASS: Please delete this section in its entirety and substitute the revised section of the same number, annotated Amendment No. 0001, attached hereto.

(7) Section 02500 - DUNE CROSSOVERS: Please delete this section in its entirety and substitute the revised section of the same number, annotated Amendment No. 0001, attached hereto.

d. CONTRACT DRAWINGS: Drawing Nos. 62040, 62042, 62043, 62047, 62048, 62049 - Please delete these drawings, in their entirety and substitute the revised sheets, of the same Drawing Numbers, with a revision date of 1 Sept 2004, attached hereto.

e. Please indicate receipt of this amendment on Standard Form 1442 (SOLICITATION, OFFER, AND AWARD) as Amendment No.0001. Failure to acknowledge all amendments may be cause for rejection of the bid.

BID SCHEDULE
 (To be attached to SF 1442)

Item No.	Description	Estimated Quantity	Unit	Unit Price	Estimated Amount
<u>BASE BID</u>					
1.	Mobilization and Demobilization	1	Job	LS	\$
2.	Beachfill	1,000,000	CY	\$	\$
3.	Sea Turtle Modifications (If a Hopper Dredge is not to be used, Enter \$0)	1	Job	LS	\$
4.	Pedestrian Crossovers	18	EA	\$	\$
5.	Dune Grass	105,228	SY	\$	\$
6.	Sand Fence	18,560	LF	\$	\$
7.	Handicap Crossover	1	Job	LS	\$
TOTAL ESTIMATED BASE BID AMOUNT					\$
<u>Option 1</u>					
8.	Beachfill	100,000	C.Y.	\$	\$
<u>Option 2</u>					
9.	Beachfill	100,000	C.Y.	\$	\$
<u>Option 3</u>					
10.	Beachfill	100,000	C.Y.	\$	\$
TOTAL ESTIMATED OPTIONS 1, 2, & 3 AMOUNT:					\$
TOTAL ESTIMATED BASE BID AND OPTIONS 1, 2, & 3 AMOUNT:					\$

NOTE: Bidders must bid on all items.

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SECTION 00800
SPECIAL CLAUSES
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SECTION 00800

SPECIAL CLAUSES

SC-1 COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK

The Contractor shall be required to (a) commence the Base Bid work under this contract within 10 calendar days after the Contractor receives the notice to proceed, which will be issued approximately 1 June 2005, (b) prosecute the work diligently, and (c) complete the entire Base Bid work ready for use not later than 180 calendar days after the date the Contractor receives the notice to proceed for the Base Bid work. Contractor shall not commence pumping sand onto the beach until August 15, 2005.

Options 1, 2, and/or 3: The Contracting Officer has the right to exercise Options 1, 2, and/or 3 within 90 calendar days after the Contractor receives the notice to proceed for the Base work. The period of performance of the contract will not be extended for the award of Options 1, 2, and/or 3 and the Options 1, 2, and/or 3 work shall be completed concurrently with Base work.

The time stated for completion shall include final cleanup of the premises.

SC-2 LIQUIDATED DAMAGES - CONSTRUCTION (APR 1984)

a. If the Contractor fails to complete the work within the time specified in the contract, or any extensions thereof, the Contractor shall pay to the Government as liquidated damages, the sum of \$1,650 for each calendar day of delay.

b. If the Government terminates the Contractor's right to proceed, the resulting damage will consist of liquidated damages until such reasonable time as may be required for final completion of the work together with any increased costs occasioned the Government in completing the work.

c. If the Government does not terminate the Contractor's right to proceed, the resulting damage will consist of liquidated damages until the work is completed or accepted. (FAR 52.211-12)

SC-3 CONTINUING CONTRACTS (MARCH 1995)

a. This is a continuing contract, as authorized by Section 103 of the River and Harbor Act of 1962 (PL 87-874). The payment of some portion of the contract price is dependent upon reservation 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 "Payment Under Fixed-Price Construction Contracts" clause of this contract.

b. The sum of \$10,000 has been reserved for this contract and is available for payments to the Contractor during fiscal year 2004. It is expected that Congressional and non-Federal project sponsor contributions will amount to approximately \$2,109,000 for fiscal year 2005. The remainder of the contract funds will be provided by Congressional and non-Federal appropriations in fiscal year 2006.

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 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 52.232-5001)

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: "Beachfill, Delaware Coast from Cape Henlopen to Fenwick Island, Fenwick Island, Delaware." The list of drawings set out on Sheet 62040 entitled "General Plan, List of Drawings, Location and Vicinity Map, Legend" is hereby incorporated by reference into this clause. (DFARS 252.236-7001)

SC-5 PHYSICAL CONDITIONS (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. The indications of physical conditions on the drawings and in the specifications are the result of site investigations by photogrammetric surveys developed from aerial photography taken in Oct 1998. Beach profiles were taken in Apr 2003. Samples of materials to be dredged for beachfill were obtained by using split-spoon and vibracore samplers.

b. Tide Data. The mean and spring ranges of tides in the vicinity of the work are 3.7 feet and 4.5 feet, respectively. Mean low water is approximately 2.30 feet below North American Vertical Datum (NAVD) 1988.

c. 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 site of the work is in the open ocean and is exposed to storms. However, safe refuge from the ocean is available in Indian River Inlet which is 11 miles north of the project or Ocean City Inlet which is 10 miles south of the project. It is believed that work can be performed during all seasons of the year except during winter months when ice and

storm conditions may interfere with dredging operations. 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.

d. Channel Traffic. Traffic in the work area consists of ocean going and commercial fishing, sport fishing vessels, U.S. Coast Guard vessels, and recreational craft.

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 for each work assignment advising navigation interests that the Contractor's dredging plant will be operating in the area. 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 each request to the Contracting Officer not less than five days prior to the start of dredging. Each request shall contain the approximate time required for completion of dredging. Upon completion of dredging, 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 dredging 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. Transportation Facilities. The work site is accessible from Delaware Route 1. The Contractor shall be responsible for all investigations of load carrying capacities of bridges and roadways.

h. Location. The town of Fenwick Island is located on the Atlantic coast of Delaware in Sussex County.

i. Laying of Submerged Pipelines and Obstruction of Channel. If it becomes necessary in the performance of this contract to use a submerged pipeline, the Contractor shall notify the Contracting Officer in advance of the scheduled placement of the pipeline. If the submerged line is to be placed across a navigable channel, the Contractor shall submit a request for approval at least ten working days (Sundays and holidays excluded) prior to the desired closure date, to the U.S. Coast Guard, MSO/Group Philadelphia, 1 Washington Avenue, Philadelphia, PA 19147-4395. A copy of each request shall be furnished to the Contracting Officer. This request shall contain the following information:

- (1) Location (Channel Centerline Stationing) and depth (over the top of

- the pipeline) at which the submerged line will be placed;
- (2) The desired length of time the channel is to be closed;
 - (3) The date and hour placement or removal will commence;
 - (4) The date and hour of anticipated completion; and
 - (5) The name and telephone number of the person to be contacted for information and response to any emergency condition.

The Coast Guard has indicated that the requirements of navigation may make it necessary to establish times other than those requested. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE HIS PLANS WITH THE COAST GUARD SUFFICIENTLY IN ADVANCE OF THE PLANNED CLOSING TO PREVENT DELAY TO THE DREDGING OPERATIONS AND COMPLY WITH THE COAST GUARD REQUIREMENTS.

j. Bridge to Bridge Radio Telephone Equipment. In order that radio telephone communication may be with passing vessels, all dredges 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.

k. Survey control descriptions are in Section 00820.

l. Magnitude of the Contract Work. The estimated value of the contract work is over \$5,000,000 to \$10,000,000.

m. Vibracore logs representative of the material to be dredged under this contract are shown in Section 00860.

n. The Fenwick Island Final Integrated Feasibility Report and Environmental Impact Statement, dated June 2000, is available for inspection in the Philadelphia District Office, Wanamaker Building, 100 Penn Square East, Philadelphia, PA. Arrangements for inspection of these documents shall be made by contacting Ms. Jane Jablonski, Basin Planning Branch, telephone number (215) 656-6588.

SC-6 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-7 LAYOUT OF WORK (APR 1965 OCE)

The Contractor shall lay out its work from Government-established survey controls, the description of which are shown on the contract drawings, 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. The Contractor shall promptly remove all stakes and markers at the completion and acceptance of work, as directed by the Contracting Officer. (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 forty (40) 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 working on wrecks, dredges, and vessels engaged in laying cables or pipe or in submarine or bank protection operations, lights to be displayed on dredge pipe lines, 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 in navigable channels, as approved by the Commandant, U.S. Coast Guard with respect to vessels on the high seas (33 CFR 81 App. A), vessels in inland waters (37 CFR 84 and 33 CFR 88), as applicable. (DAEN-PRP Ind dtd 12 Sep 83)

SC-11 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.

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-12 INSPECTION (APR 1965)

The inspectors will direct the maintenance of the gauges, ranges, location marks and limit marks in proper order and position; but the presence of the inspector shall not relieve the Contractor of responsibility for the proper execution of the work in accordance with the specifications. The Contractor will be required:

a. To furnish, on the request of the Contracting Officer or any inspector, the use of such boats, boatmen, laborers, a part of the ordinary and usual equipment and crew of the dredging plant as may be reasonably necessary in inspecting and supervising the work.

b. To furnish, on the request of the Contracting Officer or any inspector, 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 borrow 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-13 ACCOMMODATIONS AND MEALS FOR GOVERNMENT INSPECTORS (1965 APR OCE)

a. The Contractor shall furnish regularly to Government inspectors on board the dredge or other craft upon which they are employed a suitable separate

room for office and sleeping purposes. The room shall be fully equipped and maintained to the satisfaction of the Contracting Officer; it shall be properly heated, ventilated, and lighted, and shall have a desk which can be locked, a comfortable bed and chair for each inspector, and washing conveniences. The entire cost of the Contractor for furnishing, equipping and maintaining the foregoing accommodations shall be included in the contract price. If the Contractor fails to meet these requirements, the facilities referred to above will be secured by the Contracting Officer, and the cost thereof will be deducted from payments to the Contractor.

b. If the Contractor maintains on this work an establishment for the subsistence of his own employees, he shall, when requested, furnish to inspectors employed on the work, and to all Government agents who may visit the work on official business, meals of a quality satisfactory to the Contracting Officer. The meals furnished will be paid for the Government at a rate of \$5.00 per person for each meal. (CENAP)

SC-14 EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE (March 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 and series, from 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, or groups of similar serial and series, from the Contractor's accounting records, costs for that equipment shall be based upon the applicable provisions of EP 1110-1-8, "Construction Equipment Ownership and Operating Expense Schedule," Region II. 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 31.105(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 costs 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. The 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-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, satisfactory, 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 INSURANCE REQUIREMENTS

Evidence of the following types of insurance shall be provided to the Contracting Officer prior to commencement of work and shall be maintained through the period of performance:

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 Insurance and appropriate Marine Workmen's Compensation Insurance.

SC-17 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 Section --

SECTION 01010

SUMMARY OF WORK

PART 1 GENERAL

1.1 SCOPE OF SECTION

This section presents a general description of the work to be accomplished under this contract at Fenwick Island, Delaware.

1.2 DESCRIPTION OF WORK

The Base Bid contract work consists of, but is not limited to, the placement of approximately 1,000,000 cubic yards of beachfill between a point approximately 1000 feet north of Lewes Street in Fenwick Island and beyond the southern end of Fenwick Island approximately 1,000 feet south of the Maryland/Delaware state line; the planting of dune grass; the installation of pedestrian **and handicap** crossovers; and the installation of sand fence.

The contract work also consists of three separate options (Options 1, 2, and 3) to place an additional 100,000 cubic yards of beachfill, per option awarded. Option work will be awarded if the Contracting Officer determines that additional beachfill is required, based on the results of pre-placement condition surveys and changing site conditions as they occur during the contract period. Where additional beachfill is required, the option work would be placed immediately after the bid quantity in a particular area to achieve the template shown on the contract drawings.

The borrow area for beachfill material is located approximately 1 mile offshore, east of the project location.

NOTE: The borrow area is located in the vicinity of known World War II era firing ranges. A magnetometer survey of the borrow area was conducted and several individual magnetic anomalies were identified (the exact nature of the items is unknown). The identified individual magnetic anomalies are indicated on the borrow area drawings and the Contractor is prohibited from work in these areas. For the safety of the Contractor's workers and the public, the Contractor shall develop an unexploded ordnance work plan and implement some precautionary measures. See Section 01060 SAFETY and Section 02390 BEACHFILL for those requirements.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

-- End of Section --

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SECTION 01720

SURVEY REQUIREMENTS

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 in conducting pre-placement condition surveys, before- and after- beachfill placement surveys, and, before- and after-dredging surveys of the borrow area.

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.

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 1110-2-1003 (Jan. 2002) Hydrographic Survey Manual

EM 1110-1-1005 (31 Aug 1994) Topographic Surveying Manual

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:

NOTE: Any submittals classified as "SD-01 Preconstruction Submittals" require approval prior to mobilization to the contract work site. All other submittals, classified as "SD-02" through "SD-11," require approval prior to commencing the particular task to which the submittal is associated.

SD-07 Certificates

Qualifications; G,DO.

Provide qualifications of the independent licensed surveyor(s) for land and hydrographic surveying prior to commencing any survey work.

Preliminary Pre-Placement Condition Surveys; G,COR.

All raw and edited data, in HYPACK format (see format a. under "Data Submission," shall be submitted to the COR on a daily basis.

Final Pre-Placement Condition Surveys; G,DO.

The final pre-placement condition survey data shall be submitted within 10 business days after completion of the surveys. Data submittal shall be submitted as specified herein.

Before- and After-Dredging Surveys of Borrow Area; G,DO.

Before- and after-dredging survey data of the borrow area shall be submitted within 5 business days after completion of each of those surveys, respectively. Data shall be submitted as specified herein.

Before- and After-Beachfill Surveys; G,DO.

The before-beachfill survey data of a particular location shall be submitted within 5 business days after completion of that survey. After-beachfill survey data shall be submitted within 5 business days after completion of that survey. Data shall be submitted as specified herein.

Metadata; G,DO

Metadata shall be submitted within 14 business days after completion of beachfill placement operations.

SD-03 Product Data

Surveying Procedures and Equipment; G,DO.

All surveying procedures, methods, and equipment for landward beach surveys, hydrographic surveys, and tidal monitoring, shall be reviewed and approved by the Government Survey Point of Contact prior to the start of any type of surveying work.

1.4 DIFFERENTIAL GLOBAL POSITIONING SYSTEM(DGPS) EQUIPMENT

The Contractor must have a differential GPS, in accordance with the requirements for project classifications for "Navigation and Dredging Support Surveys" as referenced in the Corps of Engineers Hydrographic Survey Manual EM 1110-2-1003. The Contractor shall provide real time positioning of the dredge on a computer screen, during dredging, and have the capability of playback in 15 minute intervals. The position must be recorded on a disk every 15 minutes and submitted to the Contracting Officer on a daily basis.

1.5 HYDROGRAPHIC SURVEYS

Hydrographic surveys will be conducted to meet USACE Performance Standards for Navigation and Dredging Support, as defined in the Hydrographic Surveying Manual EM 1110-2-1003. Surveys will be performed by single transducer sounding techniques, multi-beam sweep type surveys or both. Bottom soundings will be obtained by the single beam fathometer operating at a frequency ranging from 190 to 210 Khz. When utilizing multi-beam technology, the operating frequency will range from 180 to 250 Khz. All fathometers will be calibrated following procedures outlined in the referenced EM.

1.6 TOPOGRAPHIC SURVEYS

All topographic or land based surveys performed in conjunction with this Contract shall meet all criteria outlined in EM 1110-1-1005.

1.7 QUALIFICATIONS OF SURVEYOR

All surveys must be performed by an independent survey company. All land

surveys shall be performed under the direction and supervision of a Professional Licensed Surveyor with 5 years current experience in beach profiling. All hydrographic surveys shall be conducted under the direction and supervision of a Surveyor certified by the American Congress on Surveying and Mapping (ACSM) as an In-Shore Hydrographer, or by a Professional Licensed Surveyor with a minimum of 5 years documented experience in a hydrographic surveying environment similar in nature to the surveys required under this Contract. Surveyors shall be **Delaware** licensed surveyors. ***The licensed surveyors shall be onsite a minimum of 10% of the time spent completing onsite survey work.***

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 GENERAL SURVEY REQUIREMENTS

The Contractor shall be responsible for conducting all surveys required to demonstrate that the construction is in compliance with the specified tolerances and the lines, grades, and elevations shown on the drawings. The Contractor shall be responsible for all surveys for payment purposes as specified in Special Clause SC-11 QUANTITY SURVEYS.

3.1.1 Approvals Required

All surveying procedures, methods and equipment for topographic, hydrographic and tidal monitoring (if applicable) surveys, shall be reviewed and approved by the Government Survey Point of Contact prior to the conduct of any type of surveying work. This review process shall also include the review and acceptance of the Surveyor's Qualifications, as defined in the Paragraph entitled: "Qualifications of Surveyor".

3.1.2 Vertical and Horizontal Datums

The Contractor shall utilize North American Vertical Datum (NAVD) 1988 as the vertical datum for elevation and depth references for all cross sections, and shall be responsible for obtaining necessary ocean tide height measurements during the survey periods to assure that accurate adjustments are made to the observed depths to account for tidal variations in water level. The Contractor shall utilize Delaware State Plane Coordinate System (NAD 1983) as the horizontal reference datum.

3.1.3 Tolerances

Topographic surveys shall be surveyed utilizing surveying procedures and methodology that meet or exceed accuracy tolerances of +/- 0.20 feet in the vertical and +/- 1.0 feet in the horizontal. Hydrographic surveys shall be surveyed utilizing surveying procedures and methodology that meet or exceed accuracy tolerances of +/- 0.20 feet in the vertical and +/- 3.0 feet in the horizontal. Horizontally, the vessel will be kept to within +/- 25 ft of the cross section line. In areas where obstructions are present, complete notes shall be taken explaining the offset.

3.1.4 Overlap of Survey Techniques

Survey lines requiring multiple collection methods shall have a minimum of 50 feet of overlap and five points recorded in each method recorded. All

points shall be recorded in the final submittal with attributes indicating the recording method attached. Survey points must be within 25' lateral distance of the planned profile line and overlap points must be within 25' lateral distance of the adjoining overlap point.

The timing of the hydrographic/wading/topographic portions of the survey cross sections shall be scheduled so that a minimum amount of time transpires between data collection of each portion of the survey lines. The hydrographic and wading segments shall be surveyed within a maximum time period of 3 days for each profile line. If topographic surveys of the upper beach profile are performed separate from the nearshore wading surveys, topographic and wading segments shall be surveyed within a maximum time period of 3 days for each profile line. If topographic surveys are performed separate from wading surveys, the composite profile shall be developed from the wading survey in the region of overlap. If the contractor observes significant differences in elevation between survey segments at locations where segments overlap, the contractor shall supply such information to the District for assessment, while still at the site. Significant differences between segments shall be defined as elevation differences greater than 1 foot over a distance of 10 feet or greater along a profile line, and occurring on two or more adjacent profile lines.

3.1.5 Hydrographic Surveying Techniques

The hydrographic or offshore portion of beach profile lines shall be surveyed using a towed sea sled, direct measurement methodologies or hydrographic techniques with Real Time Kinematic/On the Fly (RTK/OTF) capabilities. If a towed sea sled method is used, the horizontal and vertical positioning shall be obtained by utilizing either Differential GPS, with RTK/OTF capabilities to obtain orthometric heights in the required datum, NAVD88. The Contractor shall use the latest NGS separation model to ensure accuracy levels are met. Update rates from the GPS receiver to the data collection processor shall be collected at a minimum of 5 Hz. to a maximum interval of 20 Hz, to minimize the latency error. The DGPS data shall be augmented by heave/pitch/roll information to smooth the vertical position in the post-processing of the data. The GPS base station shall be located within 6.2 miles (10 km) of the hydrographic line being surveyed. The land and hydrographic portions of the survey shall be conducted at tidal stages to ensure overlap is obtained. The OTF system must be capable of tracking all satellites in view, minimum of five. Mask angles are not to be less than 15 degrees.

3.2 SURVEY BASELINE CONTROL

The survey baseline shall be established from the existing survey baseline control descriptions provide in Section 00820 and from the information as shown on the contract drawings. The baseline shall be surveyed utilizing surveying procedures and methodology that meet or exceed accuracy tolerances of +/- 0.10 feet in the vertical and +/- 0.10 feet in the horizontal.

3.3 PRE-PLACEMENT CONDITION SURVEYS

3.3.1 General

The beachfill area conditions are dynamic in nature. Conditions existing during the preparation of this contract may not be an accurate representation of the beachfill area conditions existing at the

commencement of beachfill operations. Consequently, the Contractor shall obtain pre-placement condition survey cross sections.

3.3.2 Completion Time Requirements

The pre-placement condition surveys shall be completed a maximum of 45 calendar days prior to starting beachfill placement and a minimum of 20 calendar days prior to starting beachfill placement.

3.3.3 Locations of Survey Lines

The pre-placement condition surveys shall be taken at the locations of the cross sections shown in the table on Drawing Number 62041.

3.3.4 Description of Required Survey Lines

The survey cross sections shall extend landward, from the survey baseline to the contractor limit of work, and, seaward, from the survey baseline to a minimum 2,500 feet seaward.

3.3.5 Intervals Required

Elevations along the cross-sections shall be taken at a maximum of 10 foot intervals, with additional elevations taken **at breaks in grade and** as necessary to describe all hydrographic and topographic features.

3.3.6 Quality Control

Data from previous surveys will be provided to the Contractor in advance of the pre-placement surveys. The Contractor shall overlay the previous surveys with pre-placement surveys as a quality control measure.

3.4 BEFORE- AND AFTER-BEACHFILL SURVEYS

3.4.1 Completion Time Requirements

Before-beachfill surveys of a location shall be conducted no more than 10 calendar days before after-beachfill surveys of that location.

3.4.2 Locations of Survey Lines

The survey cross-sections shall be taken at the locations of the cross sections shown in the table on Drawing Number 62041.

3.4.3 Description of Required Survey Lines

The survey cross sections shall extend landward, from the survey baseline to the contractor limit of work, and, seaward, from the survey baseline to a minimum 800 feet seaward.

3.4.4 Intervals Required

Elevations along the cross-sections shall be taken at a maximum of 10 foot intervals, with additional elevations taken **at breaks in grade and** as necessary to describe all hydrographic and topographic features.

3.5 BEFORE- AND AFTER-DREDGING SURVEYS OF THE BORROW AREA

3.5.1 Completion Time Requirements

Before-dredging surveys of the borrow area shall be conducted a minimum of 15 calendar days prior to dredging the borrow area. After-dredging surveys of a location shall be conducted within 10 days of completion of dredging of the borrow area.

3.5.2 Locations of Survey Lines

Before- and after-dredging surveys of the borrow areas shall consist of cross-sections taken at a maximum of 200 foot intervals.

3.5.3 Intervals Required

Elevations along the cross-section shall be taken at a maximum of 25 foot intervals, with additional elevations taken **at breaks in grade and** as necessary to describe all hydrographic features.

3.6 DATA SUBMISSION

3.6.1 General

Horizontal distances of each survey point shall be referenced as positive seaward from the established Corps baseline, and negative landward from the baseline. All survey data shall be recorded digitally on CD-ROM in ASCII text format. All profile survey data shall be submitted to the Government in all of the following formats:

- a. ASCII files for distance offset from baseline format, as shown on the attached sheets.
- b. BMAP Free Format ASCII files using distances offset from the baseline (X) and elevation (Z1), as shown on attached sheets.
- c. One ASCII file containing the following for all profile lines: profile ID, survey origin, and grid azimuth with respect to the horizontal reference coordinate system.
- d. Plotted cross section drawings in AutoCAD 2000 format for each cross section survey taken. The grid spacing shall be 10 feet in the vertical and 100 feet in the horizontal. Each drawn cross section shall show the station that it was taken from.
- e. ASCII files XYZ format, as shown on attached sheets.

All borrow area survey data shall be submitted to the Government in the following format:

Data for the pre-dredge and post-dredge Borrow Area, shall be provided in digital XYZ format and HYPACK files, both raw and edited. Sample file for XYZ format is shown on attached sheets.

3.6.2 Timely Submission of Survey Data

Survey data, unless specified otherwise, shall be submitted within 5 business days of completion of the surveys.

3.7 METADATA SUBMISSION

The data provided by the Contractor is not considered complete without Federal Geographic Data Committee (FGDC) compliant metadata file(s). Metadata Generation Software, Corpsmet95, can be downloaded via <http://corpsgeol.usace.army.mil>. The Contractor shall provide metadata file(s) for all geospatial data produced under this Contract. Geospatial data is defined as information that identifies the geographic location and characteristics of natural or constructed features and boundaries on the earth, which also includes aerial photography. Geospatial data affected by these requirements are those generated for use in a : Geographic Information System (GIS), Land Information System (LIS), remote Sensing or Image processing system, Computer-Aided Design and Drafting (CADD) system, Automated Mapping/Facilities (AM/FM) system and other computer systems that employs or references data using either absolute, relative or assumed coordinates.

The metadata file(s) must comply with Federal Geographic Data Committee (FGDC) Content Standards for Digital Geospatial Metadata Version 1.0 or higher. Corpsmet95 generates final metadata files in a ".met" file type. If the contractor chooses to use the Corpsmet95 Metadata Generation Software, in addition to the ".met" file, metadata files should be provided as ".txt" or ".html". If another generation tool is used other than Corpsmet95, the ".txt" or ".html" file type would be sufficient.

3.8 MEASUREMENT AND PAYMENT

The work specified in this section for surveys will not be measured for payment. All costs in connection therewith shall be considered incidental to those Bid Items to which the surveys are incidental.

-- End of Section --

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SURVEY DATA FORMATS

a. Distance offset from Baseline Format (Comma Delimited)

```

7202.13      Station in feet (Do not include "+")
s sf1       Program requirement (Shall be the same for all stations)
58,5.9      Offset Right Landward, Elevation
50,6.3      "
30,7.5      "
17,6.0      "
10,4.6      "
5,4.0       "
-15,1.7     Offset Left Seaward, Elevation
-25,0.7     "
-40,-0.8    "
-50,-0.9    "
-100,-1.1   "
-250,-0.4   "
-600,-0.7   "
-1500,-3.2  "
E           End of Cross section
7729.45     Station in feet (Do not include "+")
s sf1       Program requirement (Shall be the same for all stations)
Etc.

```

b. Easting, Northing, and Elevation Format or XYZ Format (Comma Delimited)

```

7202.13      Station in feet (Do not include "+")
382475.74,30975.42,-37.3 Easting, Northing, and Elevation
382475.85,30974.85,-37.3 "
382476.06,30973.78,-37.4 "
382476.16,30973.25,-37.4 "
382476.28,30972.59,-37.5 "
382476.38,30972.10,-37.5 "
382476.50,30971.45,-37.4 "
382476.60,30970.98,-37.6 "
382476.73,30970.35,-37.4 "
382476.83,30969.84,-37.6 "
382476.96,30969.22,-37.3 "
382477.07,30968.68,-37.5 "
382477.20,30968.06,-37.3 "
382477.30,30967.52,-37.4 "
382477.40,30966.88,-37.2 "
382477.48,30966.32,-37.1 "
7729.45     Station in feet (Do not include "+")
382475.74,30975.42,-37.3 Easting, Northing, and Elevation
382475.85,30974.85,-37.3 "
Etc.

```

c. BMAP Free Format

```

BR 00400 031704      Line Name; BR for Brigantine; Station; Date
      <TAB>20         Number of points in cross section
827.4000<TAB>9.6200  Offset Distance from baseline, Elevation
840.3000<TAB>8.6100      "
848.6000<TAB>6.6000      "

```

859.7000<TAB>5.4900	"
871.4000<TAB>4.2900	"
883.3000<TAB>3.1700	"
894.1000<TAB>2.4200	"
906.4000<TAB>1.6700	"
918.6000<TAB>0.6100	"
929.8000<TAB>-0.6700	"
942.9000<TAB>-1.8200	"
955.3000<TAB>-2.7400	"
956.0000<TAB>-2.8600	"
967.8000<TAB>-3.0100	"
980.0000<TAB>-2.9900	"
992.4000<TAB>-3.1800	"
1004.3000<TAB>-3.6000	"
1016.5000<TAB>-3.6900	"
1028.4000<TAB>-4.2000	"
1047.8000<TAB>-4.4200	"

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 installing geotextile associated with the pedestrian **and handicap** crossovers, complete, as specified herein and shown on the drawing.

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.

ASTM INTERNATIONAL (ASTM)

ASTM D 123	(1996a) Standard Terminology Relating to Textiles
ASTM D 3786	(1987) Standard Test Method for Hydraulic Bursting Strength of Knitted Goods and Nonwoven Fabrics - Diaphragm Bursting Strength Tester Method
ASTM D 4355	(2002) Deterioration of Geotextiles from Exposure to Light, Moisture and Heat in a Xenon-Arc Type Apparatus
ASTM D 4491	(1999a) Water Permeability of Geotextiles by Permittivity
ASTM D 4533	(1991; R 1996) Test Method for 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	(2000e1) Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products
ASTM D 4873	(2003) Identification, Storage, and Handling of Geosynthetic Rolls and Samples
ASTM D 4886	(1988; Rev. 1995) Standard Test Method for Abrasion Resistance of Geotextiles (Sand Paper / Sliding Block Method)

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

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.

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 10 feet. Samples submitted for testing shall be identified by manufacturers lot designation.

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 manufacturers name, geotextile type, lot number, roll number, and roll dimensions (length, width, gross weight). Geotextile or plastic wrapping damaged as a result of delivery, storage, or handling shall be repaired or replaced, as directed 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 woven or 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 shown on the following page:

PHYSICAL REQUIREMENTS

PROPERTY	TEST METHOD	ACCEPTABLE TEST RESULTS
Apparent Opening Size (AOS)	ASTM D 4751	U.S. Standard Sieve Nos. 70-100
Geotextile Permittivity	ASTM D 4491	0.7 sec ⁻¹ minimum.
Geotextile Permeability (kG)	ASTM D 4491	0.2 cm/sec minimum.
Puncture Strength (Unaged Geotextile)	ASTM D 4833	80 lbs minimum.
Bursting Strength (Unaged Geotextile)	ASTM D 3786	500 psi minimum.
Trapezoidal Tearing Strength (Unaged Geotextile)	ASTM D 4533	40 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	15 percent minimum in any principal direction.
Abrasion Resistance (Unaged Geotextile)	ASTM D 4886	55 lbs min. residual breaking load in any
Ultraviolet	ASTM D 4355	50% strength

PHYSICAL REQUIREMENTS

PROPERTY	TEST METHOD	ACCEPTABLE TEST RESULTS
Degradation (Unaged Geotextile)		retained at 500 hours. principal direction.

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 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 loose material, soft or low density pockets of material, shall be removed and erosion features such as rills, gullies, etc. must be graded out of the surface before geotextile placement.

3.2 INSTALLATION OF GEOTEXTILE

3.2.1 General

The geotextile shall be placed in the manner and at the locations shown on the drawings. 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. The prepared surfaces will require inspection and approval by the Contracting Officer prior to the placement of the geotextile.

3.2.2 General Placement

The geotextile shall be placed with the long dimension perpendicular to the crossover. 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 crossover. 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 base material is placed will be allowed. The temporary pins shall be removed as the base material 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.

3.2.3 Filling Against Geotextile

Base material shall be placed over the geotextile as specified in Section 02500 PEDESTRIAN **AND HANDICAP** CROSSOVERS. The geotextile shall be protected from damage during the placement of base material 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 base material shall be repaired or replaced by the Contractor at his own expense.

3.3 PROTECTION AND REPAIR OF GEOTEXTILE

3.3.1 Protection

The geotextile shall be protected at all times during construction from contamination by surface runoff and any geotextile so contaminated shall be removed and replaced with uncontaminated geotextile. Any damage to the geotextile during its installation or placement of the specified cover materials shall be replaced by the Contractor at his own expense. Adequate ballast (e.g. sand bags) shall be used to prevent uplift by wind. The work shall be scheduled so that the covering of the geotextile with the specified materials is accomplished within seven days after placement of the geotextile. Failure to comply shall require replacement of the geotextile at the Contractor's expense. In no case shall any type of equipment be allowed on the unprotected geotextile.

3.3.2 Repair

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 2 feet in all directions.

Geotextile which cannot be repaired shall be replaced.

3.4 CONTRACTOR QUALITY CONTROL

The Contractor shall include in the reports required by Section 01450 CONTRACTOR QUALITY CONTROL, the date(s) when the geotextile was placed and the date(s) when it was covered with the base material.

3.5 MEASUREMENT AND PAYMENT

The work specified in this section for placing geotextile, and all costs in connection therewith, will not be measured for payment and are considered incidental to the construction of the pedestrian **and handicap** crossovers. Payment for this work will be included in the unit price for Bid Item No. 4. "Pedestrian Crossovers" **and the lump sum price for Bid Item No. 7. "Handicap Crossover."** Payment shall include full compensation to the Contractor for hauling, storing, installing, anchoring, and protecting the geotextile prior to the placement of the base material, and for protecting the geotextile after the placement of the base material for the entire contract period.

-- End of Section --

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SECTION 02390

BEACHFILL

PART 1 GENERAL

1.1 SCOPE

The work covered by this section consists of furnishing all labor, materials, plant and equipment and performing all operations required for removal of the beachfill material from the borrow area located offshore, as shown on the contract drawings, and placing the material on the beach within the limits as specified herein and shown on the drawings.

1.2 APPLICABLE PUBLICATION

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

ASTM INTERNATIONAL (ASTM)

ASTM D 422 (1963) (R1990) Particle-Size Analysis of Soils

CORPS OF ENGINEERS PUBLICATIONS (COE)

COE EM 385-1-1 (1996) Safety and Health Requirements Manual

CODE OF FEDERAL REGULATIONS (CFR)

33 CFR 156 (1992) Navigation and Navigable Waters, Oil and Hazardous Material Transfer Operations

1.3 BORROW MATERIAL

1.3.1 Character of Borrow Material

The character of the material to be used for beachfill is believed to be as indicated by the results of Government-conducted sampling. Particle size distribution curves are included in Section 00850 of this contract. Vibracore logs and the locations of vibracore holes within the borrow area are shown on the drawings. Boulders, cobbles, and clay balls may also be encountered in the borrow area. In addition, unexploded ordnance may also be encountered (see paragraph "Unexploded Ordnance" below).

1.3.2 Location of Borrow Area

Only Fenwick South is available for use as a borrow area for this contract. The borrow area to be used is located approximately 1 mile offshore, east of the work area. The location of this borrow area and the limits to which removal of material is permitted is shown on the drawings. The boundaries of these sections are defined by the following coordinates:

Fenwick South

N164626.9, E774416.1

Fenwick South

N164626.7, E776874.2
N172968.9, E765936.2
N168421.8, E766161.8

The Contractor may remove material in this borrow area to a maximum allowable depth of 10 feet below the existing ground. Unless specifically directed by the Contracting Officer, no payment will be made for material removed from below this depth or from outside the borrow area limits.

1.3.3 Nature of Borrow Area

The surveys of the borrow area shown on the drawings are from surveys taken on 17 October 2003 and are the most recent surveys available. The borrow area conditions are dynamic in nature, and the soundings shown on the contract drawings may not be an accurate representation of the depths and conditions existing at the commencement of dredging operations in this contract. Before- and after-dredging surveys of the borrow area shall be conducted as specified in Section 01720 SURVEY REQUIREMENTS.

1.4 SITE CONDITIONS

Bidders are expected to examine the site of the work in accordance with Contract Clause: SITE INVESTIGATION AND CONDITIONS AFFECTING THE WORK to determine the conditions affecting their operations. The entire work site is designated as a hard hat area in accordance with COE EM 385-1-1. Access to the contractor staging area and beachfill site is available at the locations shown on the drawings.

1.5 FUEL OIL HANDLING

The Contractor shall assure that all fuel oil transfer operations to or from his plant comply with all applicable Federal, State, and municipal laws, codes, and regulations. The Contractor shall incorporate in his accident prevention plan, required under Paragraph "Accident Prevention Plan", sufficient information to demonstrate compliance with 33 CFR 156 and all other applicable laws, codes, and regulations.

1.6 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

Work Plan; G,COR.

The Contractor shall describe his proposed personnel, equipment, and methods for accomplishing the contract work.

Debris Prevention Plan; G,COR.

The Contractor shall devise a means and a monitoring program/method to ensure that debris (boulders, cobbles, clay balls, and other debris) is not deposited upon the beach and buried by beachfill material.

Pumpout Plan; G,COR.

If a hopper dredge is used for the contract work, the Contractor shall submit to the Contracting Officer for approval, prior to the start of work, its plan for pumpout of excavated material from the dredge to the beachfill area. The plan shall include the description, dimensions, and location of the proposed mooring facility.

Grade Stake Recovery Plan; G,COR.

Contractor shall submit a plan describing his procedures that will be used to ensure that all grade stakes placed on the beach during construction are subsequently removed.

SD-02 Shop Drawings

Borrow Area; G,DO.

The Contractor shall provide a map of the borrow area, to scale, with the Contractor-assigned stationing and range information. This map will be used by the Government to identify the location of dredging on a daily basis. The Contractor shall indicate on that mapping which corner of the borrow area is 0,0.

SD-06 Test Reports

Test Reports; G,COR.

Copies of all laboratory and field test reports shall be submitted to the Contracting Officer within one week after completion of each test.

Fuel Usage; G,COR.

The Contractor shall furnish the Contracting Officer reports, to be received on or before the last day of each month, listing the totals of fuels consumed by the dredging plant and supporting vessels. The reports shall separately list the quantities of each type of fuel used. The reports shall cover the period from the 25th of the preceding month to the 25th of the current month.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 DEDICATED PUBLIC SAFETY PERSONNEL

The Contractor shall provide a minimum of two public safety persons to patrol the perimeter of the closed beach area and direct the public to not enter the construction area. They shall have no other responsibilities. These dedicated public safety personnel shall be provided between 8:00 am and 5:00 pm, during active construction operations.

3.2 PRE-PLACEMENT CONDITION SURVEYS

Pre-placement condition surveys shall be performed as specified in Section 01720 SURVEY REQUIREMENTS. Commencement of beachfill will not be permitted

until these surveys have been submitted and approved by the COR.

3.3 UNEXPLODED ORDNANCE PRECAUTIONS AND PROCEDURES

To minimize UXOs from entering in the dredge during borrow site dredging, the dredge intake shall be fitted with a bar-type, grid screen. This screen will have a maximum opening of 38 mm (1.5 in) between adjacent bars and will be constructed out of material that is very durable and wear resistant. During the dredging operation, these screens shall be inspected daily to assure their functionality. During the pumping operations, the contractor shall provide personnel to maintain visual control at the end of the discharge line. Radio contact shall be maintained such that dredging can be halted in case of an emergency. In hours of darkness, illumination shall be provided by portable lighting equipment within 15 m (50 ft) of the pipe discharge.

If during the course of the fill placement operation, it is observed that an ordnance is discharged on the beach, the Contractor shall immediately cease the pumping operation, notify the Contracting Officer or his designated field staff, and remove the object(s) as described in the approved Unexploded Ordnance (UXO) Work Plan (see Section 01060 SAFETY). In addition, the Contractor shall conduct a magnetometer survey on the beach area being filled to assure that no additional ordnance has been placed on the beach. The survey shall include all areas placed the day prior to the discovery of ordnance on the beach, as well as, the day of, and, the first day of beachfill placement following the discovery. All surveys shall be performed in accordance with the approved Unexploded Ordnance Work Plan as required by Section 01060 SAFETY. The Contractor shall inspect the screens on his dredge equipment to determine if a break has occurred.

The CO will direct the Contractor when and where he may recommence dredging in the borrow area and thereby recommence placing beachfill.

3.3.1 Individual Magnetic Anomalies

Individual Magnetic Anomalies (IMA) are identified on the drawings of the Borrow Area. They are presented as a caution to the Contractor. These anomalies represent metal objects of undefined shapes and sizes or identity. They could be unexploded ordnance, metal objects or natural objects with a high iron content. The descriptions of these anomalies and other results of the remote sensing can be found in Section 00825 REMOTE SENSING FINDINGS. The full report, Phase 1 Submerged Cultural Resources Investigation, Delaware Atlantic Coast From Cape Henlopen to Fenwick Island, Fenwick Island Borrow Area, Sussex County, Delaware, dated February 2001, is available for inspection in the Philadelphia District Office, Wanamaker Building, 100 Penn Square East, Philadelphia, PA. Arrangements for inspection of this report may be made by contacting Ms. Jane Jablonski, telephone number (215) 656-6588.

3.4 PLACEMENT OF BEACHFILL

3.4.1 General

Beachfill material shall be placed between a point approximately 1000 feet north of Lewes Street in Fenwick Island and beyond the southern end of Fenwick Island approximately 1,000 feet south of the Maryland/Delaware state line. Beachfill material shall be placed and shaped to the beachfill template lines, grades, slopes, and elevations shown on the drawings. There shall be no pronounced ridges or wash holes in the final grades and slopes

unless otherwise indicated. If boulders, cobbles, clay balls, or other debris larger than 1.5 inch in diameter are found on the beach, the contractor shall remove the object(s) immediately. A vertical tolerance of plus 0.2 feet will be permitted in the grades and slopes, above elevation -2.3 ft. NAVD 88 (mean low water). No minus tolerance will be permitted, except below elevation -2.3 ft. NAVD 88 (mean low water) where the beachfill may be placed at a slope steeper, but not flatter, than the slopes shown on the drawings. The Contractor shall conduct his work operations so that no areas landward of the work limits shown on the drawings are disturbed. A spreader section shall be used at the discharge end of the pipeline for uniform distribution of the beachfill material. Land-based equipment shall be used for grading the beachfill material.

3.4.2 Removal of Debris

During the operation of placing beachfill material, all debris resulting from construction operations shall be removed from the work site and disposed of at the Contractor's expense. Such disposal shall comply with all applicable Federal, state, and local laws. Such materials shall be removed from the site of the work before the date of completion of the work under these specifications.

3.4.3 Restrictions on Beachfill Operations

The Contractor will be allowed to close the beach, utilizing temporary fencing, barricades, and signage, in 1000 foot sections to allow placement of beachfill. Acceptance of beachfill will be made in 1000 foot sections. After acceptance of a section, the Contractor shall advance the closed section of beach. All other sections of the beach, except staging areas, are to remain open to the general public. Ramps over the pipeline must be provided at all street ends to the beach to allow public access to the ocean. The Contractor shall ensure that any movement of pipeline or equipment is done, with recognition to the public presence, in accordance with the approved Accident Prevention Plan.

3.4.4 Hydraulic and Hopper Dredges

All pipelines used with hydraulic dredges shall be kept in good condition at all times, and any leaks or breaks shall be promptly repaired. Material excavated by hopper dredge shall be loaded into bins or hoppers and pumped directly to the beachfill area by a means which will prevent the loss of any material into the ocean. Special care shall be taken to assure that hoppers do not leak during any phase of the contract work.

3.4.5 Accident Prevention Plan

Barricades, warning signs, and lights shall be provided by the Contractor, subject to the approval of the Contracting Officer as part of the accident prevention plan, for the protection and safety of the public using the adjacent beach areas. The beachfill dredge pipe shall be clearly marked with buoy signs or other signage approved by the Contracting Officer at a distance of 200 feet seaward of the low water line at all locations that the dredge pipe is landed. This sign shall warn the public of the location and danger of the submerged pipe. All barricades, warning signs, and lights shall be installed prior to the start of any work.

3.4.6 Removal of Stakes and Markers

The Contractor shall remove all stakes, markers, temporary fencing, burlap,

pipng, or other items used in the construction of the beach immediately after completion and before approval of an acceptance section, or as otherwise directed by the Contracting Officer. All stakes, markers, temporary fencing, burlap, piping, or other items used in the construction that become uncovered after approval of the acceptance section shall be removed immediately.

3.5 CONTRACTOR QUALITY CONTROL

3.5.1 Contractor Reports

The Contractor shall prepare and maintain Daily Report of Operations forms, and shall furnish signed copies thereof with the daily Quality Control Records required in Section 01450: CONTRACTOR QUALITY CONTROL to the Contracting Officer. Copies of the Daily Report of Operations forms to be used are included at the end of that Section. NOTE: The Contractor shall provide mapping of the borrow area, to scale, with the range and stationing used to identify the location of work, as indicated on the Report of Operations forms.

3.5.2 Samples and Testing

The Contractor shall obtain samples of beachfill material from the finished beach at 1000 foot intervals or as directed by the Contracting Officer and have them tested for grain size distribution in accordance with ASTM D 422. All testing shall be performed by a Corps of Engineers approved laboratory as specified in Section 01450: CONTRACTOR QUALITY CONTROL. Samples shall be obtained at approximately elevation +4.0 NAVD 88. The results of each test shall be recorded on NAD Form 2087, a copy of which is included in Section 00840 of this contract. The Contractor shall also record on ENG Form 2087 the location of the dredge within the borrow area and the depth of dredging at the time of placement of the sand sampled. Test results shall be submitted to the Contracting Officer within one week after completion of the laboratory testing.

3.5.3 Form Preparation

Instructions regarding the preparation of all required forms will be provided at the Contractor Quality Control Coordination Meeting.

3.6 MEASUREMENT AND PAYMENT

3.6.1 Mobilization and Demobilization

All costs connected with the mobilization and demobilization of the Contractor's plant and equipment required for placement of beachfill will be paid for at the contract lump sum prices for these items as listed in the Bidding 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.

3.6.1.1 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 bid 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.

3.6.1.2 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 Bid Item No. 1, "Mobilization and Demobilization."

a. Mobilization shall include all costs for operations accomplished prior to commencement of actual beachfill placement; that is transfer of all plant and equipment to the work site, initial installation of pipelines, and all other incidentals in advance of beachfill placement operations.

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

3.6.2 Ordnance Removal

In the event that the Contractor is required to perform any work specified in Paragraph "Ordnance Precautions", the payment will be made in conformance with the DIFFERING SITE CONDITIONS clause of the CONTRACT CLAUSES.

3.6.3 Placement of Beachfill

All beachfill material placed in the designated areas within the allowable tolerance will be measured for payment by the cubic yard in place on the beach. The total number of cubic yards placed will be computed by the average-end-area method from cross-section surveys obtained by the Contractor immediately before and after the beachfill operations as required by Special Clause: QUANTITY SURVEYS. The volume so computed will be the pay quantity for the contract. A deduction of one cubic yard will be made from the pay quantity for every cubic yard of material removed from the borrow area below 10 feet from existing ground. Any deductions will be based on before and after-dredging surveys. Payment for placing and grading the beachfill material will be made at the contract unit price per cubic yard for for "Beachfill," Base Bid Item No. 2, and Options Bid Item Nos. **8, 9, and 10** (if Options 1, 2, and/or 3 are awarded). Payment for this Bid Item shall also include full compensation to the Contractor for performing all pre-placement condition surveys and quantity surveys, providing public safety personnel, and performing all material testing required. If the Contractor fails to remove boulders, cobbles, clay balls, or other debris from the beach, that completed fill section will not be accepted for payment.

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SECTION 02446

SAND FENCE AND DUNE GRASS

PART 1 GENERAL

1.1 SCOPE

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

ASTM INTERNATIONAL (ASTM)

ASTM A 641 (2003) *Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire*

ASTM F 1667 (2003) *Driven Fasteners: Nails, Spikes, and Staples*

1.3 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01300 SUBMITTAL PROCEDURES:

SD-07 Certificates

Sand Fence; G,COR. Dune Grass Plants and Seed; 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 SAND FENCE

2.1.1 Fence

Fence shall be a wood picket fence. Pickets shall be No. 1 white cedar. Pickets shall be relatively free of large knots and other structural defects. Binding wire shall be 19 gauge soft galvanized wire. Fence shall be stretched after weaving to ensure the pickets are tightly bound by the wire. Fence shall be furnished in 50-foot minimum lengths and shall be unpainted.

2.1.2 Fence Posts

Fencing shall be supported by 3" to 5" diameter cedar sawn round wood posts, 8-feet in length. Wood posts shall be untreated.

2.1.3 Fastenings

Staples shall conform to ASTM F 1667, Type IV, Style I having a minimum length of 1-1/2 inches and zinc-coated conforming to ASTM A 641, Class 3 coating.

2.2 DUNE GRASS

2.2.1 Plants

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

2.2.2 Seed

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

2.2.3 Fertilizer

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

PART 3 EXECUTION

3.1 SAND FENCE

The sand fence shall be erected in such a manner as to accumulate wind blown sand and thereby aid in the formation of a dune. Fence shall be erected in the locations and along the lines shown on the drawings. Posts shall be provided at a maximum spacing of 8 feet and shall be driven 4 feet into the ground. Fence shall be secured to posts with bottom portion of fence touching the ground surface. ***Fence shall be stapled to posts at the same locations as the picket bindings.***

3.2 DUNE GRASS

3.2.1 General

The dunes shall be fertilized and planted with beachgrass and seeded with panicgrass after construction of the dune has been completed.

3.2.2 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.

3.2.3 Planting Method

3.2.3.1 Beachgrass

One beachgrass plant consisting of two or more culms shall be planted per hole. All beachgrass plants shall be in a dormant stage at the time of planting. The plants shall be placed as shown on the contract drawings. Fertilizer shall be applied by broadcasting over planted and seeded areas at a rate of 500 lbs. per acre 30 days after the planting, but no earlier than April 1. Fertilizer application shall be repeated two more times at the same rate between June 15th and July 1st and between August 31st and September 15th during the first year of establishment.

3.2.3.2 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 10 pounds (pure live seed) per acre. Seeds shall be planted 2.0-2.5 inches deep either by hand or by a mechanically operated drill or seeder. Care shall be exercised during panic grass seeding to avoid trampling and damaging the planted beachgrass.

3.2.4 Planting Season

Beachgrass shall only be planted between 15 December and 1 April, under nonfrozen soil conditions. Panicgrass shall only be seeded between 15 February and 1 April.

3.2.5 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.

3.3 MEASUREMENT AND PAYMENT

3.3.1 Dune Grass

The unit of measurement for the placement of the dune grass and seeding will be the actual square yards of dune grass placed in accordance with this Section and the Contract Drawings and accepted by the Contracting Officer. Following placement of the dune grass, a survey shall be taken by a Delaware licensed surveyor to determine the actual square yards of dune grass placed. Costs associated with this survey shall be the

responsibility of the Contractor. Measurement of dune grass area shall be to the nearest square yard. Payment for the placement of dune grass and seeding will be made at the Contract Unit Price for Base Bid Item No. 5, "Dune Grass," which shall constitute full compensation to the Contractor for all costs associated with the placement and surveying of the dune grass and seeding.

3.3.2 Sand Fence

The work specified in this section for sand fence, installed parallel to the dune centerline, will be measured for payment by the linear footage of sand fence installed. Payment for this work will be made at the Contract Unit Price for Base Bid Item No. 6, "Sand Fence." All sand fence incidental to construction of pedestrian crossovers shall be included in the unit prices for those pedestrian crossovers.

-- End of Section --

SECTION 02500

DUNE CROSSOVERS

PART 1 GENERAL

1.1 SCOPE

The work covered by this section consists of furnishing all plant, labor, equipment, and materials, and performing all operations in connection with construction of the **handicap and** pedestrian crossovers in accordance with this Specification, as shown on the Contract Drawings or as directed by the Contracting Officer.

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.

ASTM INTERNATIONAL (ASTM)

ASTM D 1556	(1990; R 1996) Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D 1557	(1998) Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/cu. ft. (2,700 kN-m/cu. m.))
ASTM D 2922	(1996) Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
ASTM D 3017	(1988; R 1996e1) Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)

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-01 Data

Pre-Placement Test Data; G,DO.

At least 15 days prior to placement of the base material, the Contractor shall submit to the Contracting Officer the name and location of the source which is proposed for obtaining base material. In addition, the Contractor

shall submit such laboratory test data as necessary to demonstrate to the satisfaction of the Contracting Officer that the material is suitable for use as base material and meets the requirements of this Specification. All testing shall be performed by a Corps of Engineers approved laboratory as specified in SECTION 01450: CONTRACTOR QUALITY CONTROL. All testing shall be entirely at the Contractor's expense.

SD-02 Shop Drawings

Pedestrian **and Handicap** Crossovers; G,DO.

The Contractor shall submit drawings which graphically show the details of the pedestrian **and handicap** crossovers including materials and installation.

SD-09 Reports

Testing Results; G,DO.

Within one week of conclusion of physical tests, including gradation tests, proctor tests and nuclear density tests, three copies of test results, including calibration curves and results of calibration tests. Reports shall indicate the location of the sample/test, the test data, and a statement of compliance or non-compliance, where applicable.

SD-13 Certificates

Testing Laboratory Qualifications; G,COR.

Qualifications of the Independent Testing Laboratory which will be performing the required testing shall be submitted to the Contracting Officer a minimum of 7 calendar days prior to the start of construction of the crossings.

PART 2 PRODUCTS

2.1 BASE MATERIAL

The dune crossovers shall be constructed utilizing a soil aggregate, designation Borrow Type C, conforming to Subsection 209.04 of the DelDOT Specifications. The soil aggregate shall have a gradation designation of Borrow Type C as specified in Subsection 209.04, Table 209-A of the DelDOT Specifications. Recycled materials are not acceptable.

The Contracting Officer reserves the right to reject any materials, which in his opinion, contains organic material or debris in quantities which he considers objectionable. Material which is frozen at the time of placement will also be rejected.

PART 3 EXECUTION

3.1 GENERAL

The dune crossovers shall be constructed in accordance with the details, dimensions, and arrangements shown on the Contract Drawings, as directed by the Contracting Officer, or as specified.

3.2 BASE MATERIAL

3.2.1 Subgrade Preparation

Prior to the placement of the base material, the subgrade shall be shaped to the lines and grades as shown on the Contract Drawings and compacted as specified. This operations shall include disking, plowing, aeration and/or moistening, as required to obtain proper compaction. Unsatisfactory material shall be removed and replaced with satisfactory beachfill material as directed. Compaction of the prepared subgrade shall be accomplished by the controlled use of dozers or other approved equipment to at least 90 percent laboratory maximum dry density as determined by the Modified Proctor test procedure as presented in ASTM D 1557. Any previously placed beachfill material excavated to establish the required line and grades for the base material shall be placed and spread out on the beach as directed by the Contracting Officer.

3.2.2 Placing, Spreading, Moisture Control and Compaction

No fill shall be placed on any part of the foundation until such areas have been inspected and approved by the Contracting Officer. No fill shall be placed upon frozen or frost-covered ground, nor shall snow, ice or frozen material be incorporated in the fill. The base material shall be placed in maximum 12 inch lifts and compacted to at least 90 percent laboratory maximum dry density as determined by the Modified Proctor test procedure as presented in ASTM D 1557. If the material is too wet to facilitate proper compaction, it shall be removed and replaced or dried out by any method approved by the Contracting Officer. If the material is too dry to facilitate proper compaction, it shall be removed and replaced or moistened by any method approved by the Contracting Officer. Placement of the base material shall be made to the lines and grades shown on the Contract Drawings and compacted by the controlled use of the hauling and spreading equipment. Movement of the equipment shall be distributed as much as practicable over the surface to provide uniform compaction and complete coverage of the fill.

3.2.3 Rejected Material

Rejected material is defined as fill material not suitable as defined in Paragraph BASE MATERIAL of this Section. Any material that, in the opinion of the Contracting Officer, is considered unsuitable shall be promptly removed from the construction site at no expense to the Government.

3.2.4 Testing

3.2.4.1 General

The Contractor shall be wholly responsible for furnishing material meeting the requirements of this Section, for placing the material within the limits of moisture suitable for proper compaction, and for compacting the materials in accordance with the requirements of this Section. The Contractor is also responsible for performing laboratory tests as required to control the work and demonstrate compliance with material specifications. Testing shall be performed by an approved Independent Testing Laboratory retained by the Contractor. Field in-place density shall be determined in accordance with ASTM D 2922. ASTM D 2922 results in a wet unit weight of soil and ASTM D 3017 shall be used to determine the moisture content of the soil. The calibration curves furnished with the moisture gauges shall also be checked along with density calibration checks

as described in ASTM D 3017; the calibration checks of both the density and moisture gauges shall be made at the beginning of a job on each different type of material encountered and at intervals as directed by the Contracting Officer. When test results indicate, as determined by the Contracting Officer, that compaction is not as specified, the material shall be removed, replaced and recompacted to meet specification requirements. Tests on recompacted areas shall be performed to determine conformance with specification requirements. Inspections and test results shall be certified by a professional engineer registered in the State of Delaware. These certifications shall state that the tests and observations were performed by or under the direct supervision of the engineer and that the results are representative of the materials or conditions being certified by the tests. The following number of tests, if performed at the appropriate time, will be the minimum acceptable for each type operation.

a. The Contractor shall perform not less than one gradation test every fifth pedestrian crossover unless otherwise directed or approved by the Contracting Officer. The Contracting Officer will require additional tests whenever materials are questionable.

b. Proctor tests shall be performed for each type material used as base material to determine the optimum moisture and laboratory maximum density values. A minimum of two proctor tests shall be performed.

c. A minimum of three in-place nuclear density tests shall be performed per lift of base material placed at each crossing.

d. In-place densities shall be checked using ASTM D 1556 a minimum of one time during placement. Additional checks shall be performed as requested by the Contracting Officer.

3.2.4.2 Action Required for Non-Compliance

Whenever testing specified in this Section indicates material non-compliance, the Contractor may be required to remove all material not meeting the specification requirements. The Contracting Officer may require as many additional tests as necessary to identify the limits of unsuitable material. No additional payment will be made for test required to determine the limits of unsuitable material nor for the cost of removal and replacement with suitable material.

3.3 MEASUREMENT AND PAYMENT

3.3.1 Dune Crossovers

Dune crossovers shall be measured for payment as a unit for each crossover completed and accepted. Payment will be at the contract unit price per each type crossover listed in the Bid Schedule for Bid Item No. 4, "Pedestrian Crossovers". Such payment shall provide full compensation for all plant, labor, materials, equipment, base material, laboratory testing, handrails, where applicable, and incidentals necessary to complete the work as shown on the Contract Drawings and specified herein.

-- End of Section --