

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE _____ PAGE OF PAGES
1

2. AMENDMENT/MODIFICATION NO. 0003	3. EFFECTIVE DATE 8/24/04	4. REQUISITION/PURCHASE REQ. NO. W25PHS-4061-7415	5. PROJECT NO. (If applicable)
6. ISSUED BY US Army Engineer District, Philadelphia Wanamaker Building, 100 Penn Square East Philadelphia, Pennsylvania 19107-3390		7. ADMINISTERED BY (If other than Item 6) Attn: Michelle Bertoline, 215-656-6914	

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)	<input checked="" type="checkbox"/> 9A. AMENDMENT OF SOLICITATION NO. W912BU-04-B-0014
	<input checked="" type="checkbox"/> 9B. DATED (SEE ITEM 11) 25 June 2004
	10A. MODIFICATION OF CONTRACTS/ORDER NO.
	10B. DATED (SEE ITEM 13)
CODE _____ FACILITY CODE _____	

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

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

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

(a) By completing Items 8 and 15, and returning _____ 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 HENLOPEN TO FENWICK ISLAND, REHOBOTH BEACH & DEWEY BEACH, DE

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

<input checked="" type="checkbox"/>	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.
<input type="checkbox"/>	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).
<input type="checkbox"/>	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
<input type="checkbox"/>	D. OTHER (Specify type of modification and authority)

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

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)
The bid opening date is hereby extended to September 7, 2004 at 11:00 a.m.

Please indicate receipt of this Amendment on Standard Form 1442 (SOLICITATION, OFFER AND AWARD) as Amendment Number 0003. Failure to acknowledge all Amendments may be cause for rejection of the bid.

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

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

14. DESCRIPTION OF AMENDMENT (continued)

a. SPECIAL CONTRACT REQUIREMENTS:

(1) Section 00800, SPECIAL CLAUSE SC-1 COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK - Please make a pen and ink change so the paragraph reads as follows:

"The Contractor shall be required to (a) commence work under this contract within 10 calendar days after the Contractor receives the *initial* notice to proceed, (b) prosecute the work diligently, and (c) complete the entire Base Bid work ready for use not later than 270 calendar days after the date the Contractor receives the *initial* notice to proceed. ***A final notice to proceed on the Base Bid work will be issued a maximum of 90 days after the issuance of the initial notice to proceed. The initial and final notice to proceeds are related to the location of the Contractor's work limit (see contract drawings).***

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."

b. 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. 0003" 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 new section of the same number, annotated Amendment No. 0003, attached hereto.

(2) Section 01312 - QUALITY CONTROL SYSTEM (QCS): Please delete this section in its entirety and substitute the new section of the same number, annotated Amendment No. 0003, attached hereto.

(3) Section 01320 - CONSTRUCTION PHOTOGRAPHY: Please delete this section in its entirety and substitute the new section of the same number, annotated Amendment No. 0003, attached hereto.

(4) Section 01355 - ENVIRONMENTAL PROTECTION: Please delete this section in its entirety and substitute the new section of the same number, annotated Amendment No. 0003, attached hereto.

(5) Section 01720 - SURVEY REQUIREMENTS: Please delete this section in its entirety and substitute the new section of the same number, annotated Amendment No. 0003, attached hereto.

(6) Section 02390 - BEACHFILL: Please delete this section in its entirety and substitute the new section of the same number, annotated Amendment No. 0003, attached hereto.

14. DESCRIPTION OF AMENDMENT (continued)

(7) Section 02446 - SAND FENCE AND DUNE GRASS: Please delete this section in its entirety and substitute the new section of the same number, annotated Amendment No. 0003, attached hereto.

c. CONTRACT DRAWINGS: Drawing Nos. 62401, 62402, 62403, 62404, 62405, 62406, 62407 - Please delete these drawings their entirety and substitute the revised sheets, of the same Drawing Numbers, with a revision date of 25 Aug 2004, attached hereto.

d. Please indicate receipt of this amendment on Standard Form 1442 (SOLICITATION, OFFER, AND AWARD) as Amendment No. 0003. Failure to acknowledge all amendments may be cause for rejection of the bid.

SECTION 01010

SUMMARY OF WORK

PART 1 GENERAL

1.1 SCOPE

This section presents a general description of the work to be accomplished under this contract at Rehoboth Beach and Dewey Beach, Delaware.

1.2 DESCRIPTION OF WORK

The contract work consists of a Base Bid to place approximately 1,670,000 cubic yards of beachfill between the groin 1,200 feet north of Lake Avenue in Rehoboth Beach, Delaware and just beyond the southern end of Dewey Beach, Delaware, 1000 feet south of Collins Avenue.

The Base Bid includes, in addition to beachfill: the demolition of an existing handicap ramp and some existing sand fence; the construction of pedestrian, vehicular, and handicap dune crossovers; and, providing dune grass and sand fence.

The contract work also consists of three separate options (Options 1, 2, and 3) to place an additional 150,000 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 8 miles offshore, south east of the project location.

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 ***a shipwreck and various magnetic anomalies were detected. The exact nature of the various magnetic anomalies is unknown. As a precaution,*** the Contractor shall develop an unexploded ordnance work plan, and, the Contractor shall be required to implement some precautionary measures. See Section 01060 SAFETY and Section 02390 BEACHFILL for those requirements.

1.3 REQUIRED ORDER OF WORK

The Contractor shall commence the contract work at the south end of the project area, in Dewey Beach, and progress north towards Rehoboth Beach.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

-- End of Section --

SECTION 01312

QUALITY CONTROL SYSTEM (QCS)

PART 1 GENERAL

1.1 SCOPE OF SECTION

The work specified in this section includes the furnishing of all labor, material and equipment and performing all work required for the Contractor's use of the Government-furnished Construction Contractor Module of RMS, referred to as QCS, to record, maintain, and submit various information throughout the contract period.

1.2 GENERAL

The Government will use the Resident Management System for Windows (RMS) to assist in its monitoring and administration of this contract. The Contractor shall use the Government-furnished Construction Contractor Module of RMS, referred to as QCS, to record, maintain, and submit various information throughout the contract period. This joint Government-Contractor use of RMS and QCS will facilitate electronic exchange of information and overall management of the contract. QCS provides the means for the Contractor to input, track, and electronically share information with the Government in the following areas:

- Administration
- Finances
- Quality Control
- Submittal Monitoring
- Scheduling
- Import/Export of Data

1.2.1 Correspondence and Electronic Communications

For ease and speed of communications, both Government and Contractor will, to the maximum extent feasible, exchange correspondence and other documents in electronic format. Correspondence, pay requests and other documents comprising the official contract record shall also be provided in paper format, with signatures and dates where necessary. Paper documents will govern, in the event of discrepancy with the electronic version.

1.2.2 Other Factors

Particular attention is directed to Contract Clause, "Schedules for Construction Contracts", Contract Clause, "Payments", Section 01325, PROJECT SCHEDULE, Section 01330, SUBMITTAL PROCEDURES, and Section 01450, CONTRACTOR QUALITY CONTROL, which have a direct relationship to the reporting to be accomplished through QCS. Also, there is no separate payment for establishing and maintaining the QCS database; all costs associated therewith shall be included in the contract pricing for the work.

1.3 QCS SOFTWARE

QCS is a Windows-based program that can be run on a stand-alone personal computer or on a network. The Government will make available the QCS software to the Contractor after award of the construction contract. Prior

to the Pre-Construction Conference, the Contractor shall be responsible to download, install and use the latest version of the QCS software from the Government's RMS Internet Website. Upon specific justification and request by the Contractor, the Government can provide QCS on 3-1/2 inch high-density diskettes or CD-ROM. Any program updates of QCS will be made available to the Contractor via the Government RMS Website as they become available.

1.4 SYSTEM REQUIREMENTS

See Section 01500 TEMPORARY CONSTRUCTION for computer hardware and software requirements.

1.5 RELATED INFORMATION

1.5.1 QCS User Guide

After contract award, the Contractor shall download instructions for the installation and use of QCS from the Government RMS Internet Website; the Contractor can obtain the current address from the Government. In case of justifiable difficulties, the Government will provide the Contractor with a CD-ROM containing these instructions.

1.5.2 Contractor Quality Control (CQC) Training

The use of QCS will be discussed with the Contractor's QC System Manager during the mandatory CQC Training class.

1.6 CONTRACT DATABASE

Prior to the pre-construction conference, the Government shall provide the Contractor with basic contract award data to use for QCS. The Government will provide data updates to the Contractor as needed, generally by files attached to E-mail. These updates will generally consist of submittal reviews, correspondence status, QA comments, and other administrative and QA data.

1.7 DATABASE MAINTENANCE

The Contractor shall establish, maintain, and update data for the contract in the QCS database throughout the duration of the contract. The Contractor shall establish and maintain the QCS database at the Contractor's site office. Data updates to the Government shall be submitted by E-mail with file attachments, e.g., daily reports, schedule updates, payment requests. If permitted by the Contracting Officer, a data diskette or CD-ROM may be used instead of E-mail (see Paragraph DATA SUBMISSION VIA COMPUTER DISKETTE OR CD-ROM). The QCS database typically shall include current data on the following items:

1.7.1 Administration

1.7.1.1 Contractor Information

The database shall contain the Contractor's name, address, telephone numbers, management staff, and other required items. Within 14 calendar days of receipt of QCS software from the Government, the Contractor shall deliver Contractor administrative data in electronic format via E-mail.

1.7.1.2 Subcontractor Information

The database shall contain the name, trade, address, phone numbers, and other required information for all subcontractors. A subcontractor must be listed separately for each trade to be performed. Each subcontractor/trade shall be assigned a unique Responsibility Code, provided in QCS. Within 14 calendar days of receipt of QCS software from the Government, the Contractor shall deliver subcontractor administrative data in electronic format via E-mail.

1.7.1.3 Correspondence

All Contractor correspondence to the Government shall be identified with a serial number. Correspondence initiated by the Contractor's site office shall be prefixed with "S". Letters initiated by the Contractor's home (main) office shall be prefixed with "H". Letters shall be numbered starting from 0001. (e.g., H-0001 or S-0001). The Government's letters to the Contractor will be prefixed with "C".

1.7.1.4 Equipment

The Contractor's QCS database shall contain a current list of equipment planned for use or being used on the jobsite, including the most recent and planned equipment inspection dates.

1.7.1.5 Management Reporting

QCS includes a number of reports that Contractor management can use to track the status of the project. The value of these reports is reflective of the quality of the data input, and is maintained in the various sections of QCS. Among these reports are: Progress Payment Request worksheet, QA/QC comments, Submittal Register Status, Three-Phase Inspection checklists.

1.7.2 Finances

1.7.2.1 Pay Activity Data

The QCS database shall include a list of pay activities that the Contractor shall develop in conjunction with the construction schedule. The sum of all pay activities shall be equal to the total contract amount, including modifications. Pay activities shall be grouped by Contract Line Item Number (CLIN), and the sum of the activities shall equal the amount of each CLIN. The total of all CLINs equals the Contract Amount.

1.7.2.2 Payment Requests

All progress payment requests shall be prepared using QCS. The Contractor shall complete the payment request worksheet and include it with the payment request. The work completed under the contract, measured as percent or as specific quantities, shall be updated at least monthly. After the update, the Contractor shall generate a payment request report using QCS. The Contractor shall submit the payment requests with supporting data by E-mail with file attachment(s). If permitted by the Contracting Officer, a data diskette may be used instead of E-mail. A signed paper copy of the approved payment request is also required, which shall govern in the event of discrepancy with the electronic version.

1.7.3 Quality Control (QC)

QCS provides a means to track implementation of the 3-phase QC Control System, prepare daily reports, identify and track deficiencies, document progress of work, and support other contractor QC requirements. The Contractor shall maintain this data on a daily basis. Entered data will automatically output to the QCS generated daily report. The Contractor shall provide the Government a Contractor Quality Control (CQC) Plan within the time required in Section 01450, CONTRACTOR QUALITY CONTROL. Within seven calendar days of Government acceptance, the Contractor shall submit a data diskette or CD-ROM reflecting the information contained in the accepted CQC Plan: schedule, pay activities, features of work, submittal register, QC requirements, and equipment list.

1.7.3.1 Daily Contractor Quality Control (CQC) Reports.

QCS includes the means to produce the Daily CQC Report. The Contractor may use other formats to record basic QC data. However, the Daily CQC Report generated by QCS shall be the Contractor's official report. Data from any supplemental reports by the Contractor shall be summarized and consolidated onto the QCS-generated Daily CQC Report. Daily CQC Reports shall be submitted as required by Section 01450, CONTRACTOR QUALITY CONTROL. Reports shall be submitted electronically to the Government using E-mail or diskette within 24 hours after the date covered by the report. Use of either mode of submittal shall be coordinated with the Government representative. The Contractor shall also provide the Government a signed, printed copy of the daily CQC report.

1.7.3.2 Deficiency Tracking.

The Contractor shall use QCS to track deficiencies. Deficiencies identified by the Contractor will be numerically tracked using QC punch list items. The Contractor shall maintain a current log of its QC punch list items in the QCS database. The Government will log the deficiencies it has identified using its QA punch list items. The Government's QA punch list items will be included in its export file to the Contractor. The Contractor shall regularly update the correction status of both QC and QA punch list items.

1.7.3.3 Three-Phase Control Meetings

The Contractor shall maintain scheduled and actual dates and times of preparatory and initial control meetings in QCS.

1.7.3.4 Accident/Safety Tracking.

The Government will issue safety comments, directions, or guidance whenever safety deficiencies are observed. The Government's safety comments will be included in its export file to the Contractor. The Contractor shall regularly update the correction status of the safety comments. In addition, the Contractor shall utilize QCS to advise the Government of any accidents occurring on the jobsite. This brief supplemental entry is not to be considered as a substitute for completion of mandatory reports, e.g., ENG Form 3394 and OSHA Form 200.

1.7.3.5 Features of Work

The Contractor shall include a complete list of the features of work in the QCS database. A feature of work may be associated with multiple pay

activities. However, each pay activity (see subparagraph "Pay Activity Data" of paragraph "Finances") will only be linked to a single feature of work.

1.7.3.6 QC Requirements

The Contractor shall develop and maintain a complete list of QC testing, transferred and installed property, and user training requirements in QCS. The Contractor shall update all data on these QC requirements as work progresses, and shall promptly provide this information to the Government via QCS.

1.7.4 Submittal Management

The Government will provide the initial submittal register, ENG Form 4288, SUBMITTAL REGISTER, in electronic format. Thereafter, the Contractor shall maintain a complete list of all submittals, including completion of all data columns. Dates on which submittals are received and returned by the Government will be included in its export file to the Contractor. The Contractor shall use QCS to track and transmit all submittals. ENG Form 4025, submittal transmittal form, and the submittal register update, ENG Form 4288, shall be produced using QCS. RMS will be used to update, store and exchange submittal registers and transmittals, but will not be used for storage of actual submittals.

1.7.5 Schedule

The Contractor shall develop a construction schedule consisting of pay activities, in accordance with Contract Clause "Schedules for Construction Contracts", or Section 01325, PROJECT SCHEDULE, as applicable. This schedule shall be input and maintained in the QCS database either manually or by using the Standard Data Exchange Format (SDEF) (see Section 01325 PROJECT SCHEDULE). The updated schedule data shall be included with each pay request submitted by the Contractor.

1.7.6 Import/Export of Data

QCS includes the ability to export Contractor data to the Government and to import submittal register and other Government-provided data, and schedule data using SDEF.

1.8 IMPLEMENTATION

Contractor use of QCS as described in the preceding paragraphs is mandatory. The Contractor shall ensure that sufficient resources are available to maintain its QCS database, and to provide the Government with regular database updates. QCS shall be an integral part of the Contractor's management of quality control.

1.9 DATA SUBMISSION VIA COMPUTER DISKETTE OR CD-ROM

The Government-preferred method for Contractor's submission of updates, payment requests, correspondence and other data is by E-mail with file attachment(s). For locations where this is not feasible, the Contracting Officer may permit use of computer diskettes or CD-ROM for data transfer. Data on the disks or CDs shall be exported using the QCS built-in export function. If used, diskettes and CD-ROMs will be submitted in accordance with the following:

1.9.1 File Medium

The Contractor shall submit required data on 3-1/2 inch double-sided high-density diskettes formatted to hold 1.44 MB of data, capable of running under Microsoft Windows 95 or newer. Alternatively, CD-ROMs may be used. They shall conform to industry standards used in the United States. All data shall be provided in English.

1.9.2 Disk or CD-ROM Labels

The Contractor shall affix a permanent exterior label to each diskette and CD-ROM submitted. The label shall indicate in English, the QCS file name, full contract number, contract name, project location, data date, name and telephone number of person responsible for the data.

1.9.3 File Names

The Government will provide the file names to be used by the Contractor with the QCS software.

1.10 MONTHLY COORDINATION MEETING

The Contractor shall update the QCS database each workday. At least monthly, the Contractor shall generate and submit an export file to the Government with schedule update and progress payment request. As required in Contract Clause "Payments", at least one week prior to submittal, the Contractor shall meet with the Government representative to review the planned progress payment data submission for errors and omissions. The Contractor shall make all required corrections prior to Government acceptance of the export file and progress payment request. Payment requests accompanied by incomplete or incorrect data submittals will be returned. The Government will not process progress payments until an acceptable QCS export file is received.

1.11 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the requirements of this specification. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 MEASUREMENT AND PAYMENT

No separate measurement or payment will be made for the work specified in this section and all costs in connection therewith shall be included in the costs of all the bid items.

-- End of Section --

SECTION 01320

CONSTRUCTION PHOTOGRAPHY

PART 1 GENERAL

1.1 SCOPE OF SECTION

The work specified in this section includes construction photographs consisting of prints, digital image files, and videography showing the pre-construction condition, post-construction condition, progress of work during the contract period, work methods, and equipment utilized.

1.2 SUBMITTALS

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

SD-07 Certificates

Photography Plan; G,COR.

The Contractor shall submit, for approval, each month, his photography plan, which shall include the following information: items to be photographed and videotaped, locations, and the time the images are to be taken.

Pre-Construction Photographs; G,COR.

Pre-Construction photographs, digital images, and video shall be furnished to the Government within 10 calendar days of when they are taken. They shall be taken as close as possible to the beginning of the construction work. The Contractor shall provide 3-inch, 3-ring binders and plastic photo-holder pages which shall hold the size of photos submitted. The Contractor shall submit the digital images on a disc or CD. The Contractor shall submit the videography on a VHS tape.

Construction Photographs; G,COR.

Construction photographs, digital images, and video shall be furnished to the Government within 10 days of when they are taken throughout the contract period. The photos shall be submitted in plastic photo-holder pages as described above. The digital images shall be submitted on a disc or CD. The Contractor shall submit the videography on a VHS tape.

Post-Construction Photographs; G,COR.

Post-Construction photographs, digital images, and video shall be furnished to the Government within 10 calendar days of when they are taken. They shall be taken immediately after the end of the construction work. The photos shall be submitted in plastic photo-holder pages as described above. The digital images shall

be submitted on a disc or CD. The Contractor shall submit the videography on a VHS tape.

One set (of the required seven copies) of photographs, videotape, and digital images, and identification information of the above required photographs, shall be sent to the Philadelphia District Office at the following address:

U.S. Army Corps of Engineers
Philadelphia District
Design Branch (CENAP-EC-DC)
Wanamaker Building
100 Penn Square East
Philadelphia, PA 19107-3390

One additional set of digital images, and identification information of the images, shall be sent to the Philadelphia District Office's Technical Library, at the following address:

U.S. Army Corps of Engineers
Philadelphia District
Technical Library (CENAP-IM)
ATTN: Ms. L. Skale
Wanamaker Building
100 Penn Square East
Philadelphia, PA 19107-3390

1.3 QUALITY ASSURANCE

All photography shall be performed by a qualified, established commercial photographer.

1.4 GENERAL REQUIREMENTS

1.4.1 Prints

Prints shall be 8" x 10", color, on single weight paper with smooth surface, glossy finish. Identification information on back of each print shall include: name and location of project, item/action being photographed, General Contractor, orientation of view, date and time of exposure, and name and address of photographer.

1.4.2 Digital Images

Digital images shall be taken with a high quality digital camera using a minimum of 3,000,000 pixels. Images shall be identified by number and referenced to a printed listing containing the same identification information as used for the prints. The digital images may be furnished on 3-1/2 inch discs or compact disc (CD).

1.4.3 Videography

Video shall be taken using a high quality video camera which displays the date and time. The video shall be furnished on a VHS tape capable of playing in a standard VCR.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 PHOTOGRAPHY

The Contractor shall photograph the personnel, materials, work methods, and equipment utilized during the entire contract period, as follows:

- a. Prior to commencement of work the Contractor shall take a minimum of 25 photographs of the pre-construction, existing conditions.*
- b. During the progress of the work, a minimum of 15 photographs shall be taken monthly of each definable feature of work ("defineable feature of work" is defined in Section 01312 QUALITY CONTROL SYSTEM (QCS)) of work. NOTE: All photography for documenting the "progress of work" shall be of actual, working personnel and equipment, depicting the work methods being utilized, taken during normal working hours.*
- c. After completion of the work, the Contractor shall take a minimum of 25 photographs of the site from the same locations photographed to record the pre-construction, existing conditions.*
- d. In addition, the Contractor shall photograph special events throughout the contract period as directed by the Contracting Officer's Representative.*

3.2 VIDEOGRAPHY

A minimum of 2 hours of video shall be taken during each phase of the contract period (Pre-Construction, Construction, Post-Construction). Video taping shall be performed to provide an accurate and detailed description of construction equipment and methods utilized for the contract work. NOTE: All video for documenting the "progress of work" shall be of actual, working personnel and equipment, depicting the work methods being utilized, taken during normal working hours.

- a. Video taping shall be performed with a government representative.
- b. Video taping work shall be performed, with adequate lighting to ensure a clear visual record.
- c. The time and date shall be continuously displayed on the videotape.
- d. Videotapes of different facilities shall be preceded by a minimum of a ten second written description of the item video taped including the specific item and location video taped, the date and time of the video taping, and the name of the contractor and videographer.
- e. Prior to commencement of work, the Contractor shall videotape the existing condition the of existing structures.

3.3 MEASUREMENT AND PAYMENT

No separate measurement or payment will be made for the work specified in this section and all costs in connection therewith shall be included in the the cost of all the bid items.

-- End of Section --

SECTION 01355

ENVIRONMENTAL PROTECTION

PART 1 GENERAL

1.1 SUMMARY

This section covers the furnishing of all labor, material and equipment and performing all work required for the protection of the environment during beachfill operations except, for those measures set forth in other sections of these specifications.

1.2 REFERENCES (Not Applicable)

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

SD-01 Preconstruction Submittals

Location of Storage Facilities; G,COR.

Plans showing storage and other construction facilities shall be submitted for approval of the Contracting Officer.

Hopper Dredge Basket or Screens; G,COR.

Drawings showing the design and method of fabrication of the basket or screen used for hopper dredging as specified.

SD-07 Certificates

Environmental Protection Plan; G,COR.

Prior to commencement of the work, the Contractor shall submit to the Contracting Officer for approval his proposed environmental protection plan. This shall be followed by a meeting with representatives of the Contracting Officer to develop mutual understandings relative to compliance with this provision and administration of the environmental protection program. Approval of the Contractor's plan for environmental protection will not relieve the Contractor of his responsibility for adequate and continuing control of pollutants.

Government Observer Accommodations Plan; G,COR.

Prior to commencement of dredging work, the Contractor shall submit to the Contracting Officer for approval his proposed Government observer accommodations plan as specified in this section.

1.4 DEFINITION OF ENVIRONMENTAL PROTECTION

For the purpose of this specification, environmental protection is defined as the retention of the environment in its natural state to the greatest extent possible during beachfill and associated dredging operations and to enhance the natural appearance in its final condition. Environmental protection requires consideration of air, water, and land resources and involves noise, solid waste-management and management of other pollutants. In order to prevent, and to provide for abatement and control of any environmental pollution arising from the beachfill and associated dredging activities in performance of this contract, the Contractor and his subcontractors shall comply with all applicable Federal, state, and local laws and regulations and shall obtain all necessary permits required by same.

1.5 NOTIFICATION

The Contracting Officer will notify the Contractor in writing of any non-compliance with the aforementioned Federal, state, or local laws or regulations. Such notice, when delivered to the Contractor or his authorized representative at the site of the work, shall be deemed sufficient for the purpose. The Contractor shall, after receipt of such notice, immediately inform the Contracting Officer of proposed corrective action and take such action as may be approved. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made subject of a claim for extension of time or for excess costs or damages by the Contractor.

1.6 SUBCONTRACTORS

Compliance with the provisions of this section by subcontractors will be the responsibility of the Contractor.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 PROTECTION OF LAND RESOURCES

3.1.1 General

The land resources within the project boundaries and outside the limits of work performed under this contract shall be preserved in their present condition or be restored to a condition, after completion of the work, that will appear to be natural and not detract from the appearance of the area. The Contractor shall confine his activities to the areas indicated by the plans and specifications. The following additional requirements are intended to supplement the requirements of the Contract Clauses.

3.1.2 Prevention of Landscape Defacement

Except in areas indicated on the plans or specified to be cleared, the

Contractor shall not deface, injure, or destroy trees or shrubs, nor remove or cut them without the authority of the Contracting Officer. Ropes, cables, or guys shall not be fastened to or attached to any existing nearby trees for anchorages unless specifically authorized. Where such special emergency use is permitted, it shall be performed in such a manner as to avoid damage to the trees. The Contractor shall in any event be responsible for any damage resulting from such use. Where the possibility exists that trees may be defaced, bruised, injured, or otherwise damaged by the Contractor's equipment or operations, the Contractor shall adequately protect such trees. Stone, earth or other material that is displaced into uncleared areas shall be removed. Monuments and markers shall be protected before construction operations commence.

3.1.3 Vegetation on Dunes

The Contractor shall take extra precautions to protect any existing vegetation on existing dunes from damage.

3.1.4 Seabeach Amaranth

The Contractor shall take all necessary actions to ensure protection of the seabeach amaranth plant, which is a Federally threatened species. The seabeach amaranth growing season runs from May through November. The Contractor shall ensure that all employees are aware of the potential presence of a threatened species and provide sufficient information describing the seabeach amaranth. The COR shall be immediately notified if any seabeach amaranth plants are located within the project area. State personnel will conduct amaranth surveys and delineate any plant locations within the project area prior to construction activities. If any plants are found, the Contractor shall be responsible for establishing a 3 meter buffer zone around any plant. Construction activities will avoid any delineated locations of seabeach amaranth to the greatest extent possible until the plant dies back or can be relocated by the appropriate agency. Construction activities are defined as, but not limited to, surveys, the movement of equipment and vehicles and the placement/storage of materials or piping. There are currently no known populations of seabeach amaranth within the project area. The Contractor shall be responsible for taking any additional action, as directed by the COR, to insure adequate protection of the seabeach amaranth

3.1.5 Restoration of Landscape Damage

Any dune grassed areas or other landscape feature scarred or damaged by the Contractor's equipment or operations shall be restored to a condition satisfactory to the Contracting Officer. Any disturbed dune grassed areas shall be replanted as directed by the Contracting Officer.

3.1.6 Location of Storage Facilities

Contractor's storage and other construction buildings, which are required in the performance of the work, shall be located upon cleared portions of the job site and shall require the written approval of the Contracting Officer. The preservation of the landscape shall be an imperative consideration in the selection of all sites and in the construction of buildings. Where buildings or platforms are constructed on sidehills, the Contracting Officer may require cribbing to be used to obtain level foundations. Benching or leveling of earth may be permitted, depending on the location of the proposed facility.

3.1.7 Post Construction Cleanup or Obliteration

The Contractor shall obliterate all signs of temporary construction facilities, excess materials, or any other vestiges of construction as directed by the Contracting Officer. The area will be restored to near natural conditions which will permit the growth of vegetation thereon.

3.2 RECORDING AND PRESERVING HISTORICAL AND ARCHAEOLOGICAL FINDS

All items having any apparent historical or archaeological interest which are discovered in the course of any contract work activities shall be carefully preserved. The Contractor shall leave the archaeological find undisturbed and shall immediately report the find to the Contracting Officer so that proper authorities may be notified.

3.2.1 Archaeological Monitoring

The Contractor's CQC System Manager and any approved alternate CQC System Managers shall be required to attend a Corps of Engineers facilitated 1 day training class on archaeological monitoring. A person trained in archaeological monitoring shall be on the site at all times during construction and shall be employed by the prime Contractor. Certificates, valid for two years, will be issued to those completing the archaeological monitoring class.

3.3 PROTECTION OF WATER RESOURCES

3.3.1 General

The Contractor shall not pollute any streams, rivers or waterways with fuels, oils, bitumens, calcium chloride, acids, insecticides, herbicides or other harmful materials. The Contractor shall investigate and comply with all applicable Federal, state, county, and municipal laws concerning pollution of rivers and streams.

3.3.2 Disposal

Disposal of any debris resulting from the contract work and any wastes, effluents, trash, garbage, oil, grease, chemicals, etc., in or adjacent to the work area will not be permitted. If any waste material is dumped in unauthorized areas, the Contractor shall remove the material and restore the area to its original condition. If necessary, contaminated ground shall be excavated, disposed of as directed by the Contracting Officer, replaced with suitable fill material, compacted and finished with topsoil, and planted as required to reestablish vegetation.

3.4 PROTECTION OF FISH AND WILDLIFE

3.4.1 General

The Contractor shall at all times perform all work and take such steps required to minimize interference with or disturbance to fish and wildlife. The Contractor will not be permitted to alter water flows or otherwise disturb native habitat adjacent to any disposal area which, in the opinion of the Contracting Officer, are critical to fish and wildlife.

3.4.2 Piping Plover

The Contractor shall take all necessary actions to ensure protection of the piping plover bird, which is a Federally threatened species; and colonial nesting bird colonies consisting of one or more of the following state rare species: least tern, american oystercatcher, and black skimmer. The nesting season begins on 15 March (approximately) and ends on 15 August (approximately). The Contractor shall ensure that all employees are aware of the potential presence of these species and provide sufficient information describing them. The COR shall be immediately notified if any piping plovers and/or colonial nesting birds are sighted in the vicinity of the project area. During the nesting season, the Contractor shall be responsible for establishing a 300 meter buffer zone between all construction activities and nests. If necessary, the buffer zone may be expanded if the 300 meter buffer zone is found to be inadequate. Construction activities are defined as, but not limited to, the movement of equipment and vehicles and the placement/storage of materials or piping. The Contractor shall delineate the buffer zones by erecting orange plastic fencing. All Contractor personnel, vehicles and equipment must remain outside the buffer zones unless given approval by the COR. Bird monitors will be on-site to monitor and delineate each nest within the buffer zones. Absolutely no access is permitted within the State-delineated nesting zones. The Contractor shall be responsible for taking any additional action, as directed by the COR, to insure adequate protection of the nests and chicks.

Historically, piping plovers and colonial nesting birds have not had any recent nesting within and/or near the project area, but could potentially be present during the nesting season. These birds have the potential to nest anywhere within the contract limits. The Contractor shall be prepared to take all necessary actions to ensure protection of these species, regardless of the nesting location within the contract limits or overlapping buffer zone if outside of the contract limits, in accordance with the specifications above.

3.4.2.1 Surveying Operations

Piping plover and colonial nesting areas will be identified and roped off by the Delaware Department of Natural Resources and Environmental Control in March each year or whenever nests are discovered, and the rope will remain in place until approximately the middle of August. When conducting beach profile surveys, the Contractor shall be cognizant of nesting areas and may not enter any roped-off areas for any reason without approval of the Contracting Officer. In addition, vehicles will not be permitted within 300 meters of these nesting areas until after 15 August (approximately). If a sled is being used during the survey efforts, it shall remain below the water line at all times. The Contractor shall notify the Contracting Officer if a sled will be used during surveying operations, prior to the start of survey operations.

3.4.3 Whale Monitoring

The Contractor shall observe for the presence of whales during all dredging activities in this Contract, and shall record the presence of any whales on the Daily Report of Operations form. The Contractor shall notify the Contracting Officer immediately following the sighting of a whale.

3.4.4 Sea Turtle Modifications (Hopper Dredging Only)

If a hopper dredge is used for dredging, the Contractor shall comply with the following requirements from 1 June to 15 November. The intent of the following requirements are to monitor and document the presence of and document the effect of dredging on sea turtles. The intent of the following requirements is not to stop the dredging operations upon the encounter with sea turtles.

3.4.4.1 General

The Contractor shall have a National Marine Fisheries Service (NMFS) and Corps of Engineers approved turtle monitor on board to observe for the presence of turtles during all dredging activities in this contract conducted between 1 June and 30 November. The Contractor shall not perform dredging operations unless the monitor is aboard the Contractor's dredge and baskets or screening have been approved and installed. The Contractor shall provide a private sleeping quarter and a private bathroom and private shower facility, for the exclusive use by the monitor. The Contractor shall also provide accommodations and meals for the observer in accordance with SPECIAL CLAUSE: ACCOMMODATIONS AND MEALS FOR GOVERNMENT INSPECTORS; and transportation for the observers in accordance with SPECIAL CLAUSE: INSPECTION. These requirements shall be in addition to those for the government inspectors. The Contractor shall notify the Contracting Officer immediately following the discovery of a sea turtle or sea turtle parts. The presence of any whales or turtles will be recorded on the Daily Report of Operations form, as well as the monitoring forms that will be supplied.

3.4.4.2 Hopper Dredge Modifications

a. Baskets or Screens: The Contractor shall install baskets or screening over the hopper inflow and overflows. The baskets or screening shall have openings of approximately 4 inches by 4 inches. Dredges not capable of screening both hopper inflow and overflow will not be acceptable under this contract. The design and method of fabrication will depend on the construction of the dredge used and shall be subject to the approval of the Contracting Officer. The screening or baskets shall provide 100 percent coverage of all dredged material for hopper inflow or overflow. The baskets or screening shall remain in place during all dredging operations.

b. Floodlights: The Contractor shall install and maintain floodlights to allow the Government observers to safely monitor the baskets or screening.

c. Freezer: The Contractor shall provide sufficient space in a freezer aboard the dredge for storing dead sea turtles or any turtle parts collected during the dredging operations.

3.4.4.3 Special Dredging Operating Requirements

The Contractor shall allow sufficient time between each dredging cycle for the Government observers for: inspection of the baskets or screens for turtles and/or turtle parts; documentation; and collection and labeling of any dead turtle or turtle parts for freezing. Dredging shall not be performed while the draghead is in the water column to minimize potential impacts to sea turtles. Operation should begin when the dragarm reaches the sediment and end before the dragarm is removed from the sediment..

3.5 DISPOSAL OF DEBRIS

All debris resulting from contract operations shall be removed from the project sites daily, as directed by the Contracting Officer, and disposed of at the Contractor's expense. Such disposal shall comply with all applicable Federal, state, and local laws.

3.6 MAINTENANCE OF POLLUTION, EROSION AND SEDIMENTATION CONTROL FACILITIES DURING CONSTRUCTION

During the life of this contract, the Contractor shall maintain all facilities constructed for pollution, erosion and sedimentation control under this contract as long as the operations creating the particular pollutant are being carried out or until the material concerned has become stabilized to the extent that pollution is no longer being created. During the contract period, the Contractor shall conduct frequent training sessions on environmental protection. The curricula should include methods of detecting and avoiding pollution; familiarity with pollution standards, both statutory and contractual; and installation and care of vegetative covers, plants and other facilities to prevent and correct environmental pollution.

3.7 MEASUREMENT AND PAYMENT

3.7.1 Sea Turtle Modifications and Whale Monitoring

The work specified in this section for the sea turtle modifications and whale monitoring will not be measured for payment and all costs in connection therewith shall be included in the contract lump sum price for Bid Item No. 3, "Sea Turtle Modifications and Whale Monitoring".

3.7.2 Environmental Protection

No separate measurement or payment will be made for all other work specified in this section and all costs in connection therewith shall be included in the costs of all the bid items.

-- End of Section --

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 Delaware 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.

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 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 Contractor shall obtain pre-placement condition surveys between Stations 20+59 in Rehoboth Beach and 176+23 in Dewey Beach. The cross sections shall be obtained at the locations of the cross sections shown on the contract drawings.

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 1,900 feet seaward. The origin of the new profile lines shall be the survey baseline, as shown on sections on the contract drawings but shall extend landward to include the dune construction.

3.3.5 Intervals Required

Elevations along the cross-sections shall be taken at a maximum of 10 foot intervals, with additional elevations taken as necessary to describe all hydrographic features. The topographic portion of the cross-sections shall include elevations taken at a maximum spacing of 10 foot intervals with additional elevations taken at all slope breaks and all other 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 along the entire contract area at the locations indicated on cross sections on the contract drawings.

3.4.3 Description of Required Survey Lines

The survey cross sections shall extend 1,000 feet the survey baseline. The origin of the new profile lines shall be the survey baseline, as shown on sections on the contract drawings but shall extend landward to include the dune construction.

3.4.4 Intervals Required

Elevations along the cross-sections shall be taken at a maximum of 10 foot

intervals, with additional elevations taken as necessary to describe all hydrographic features. The topographic portion of the cross-sections shall include elevations taken at a maximum spacing of 10 foot intervals with additional elevations taken at all slope breaks and all other 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

The surveys shall be conducted along the same lines as indicated on the borrow area surveys provided in the contract drawings.

3.5.3 Intervals Required

The surveys shall be conducted at the same intervals as indicated on the borrow area surveys provided in the contract drawings.

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 --

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 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.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (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 00855 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

The location of the borrow area and the limits to which removal of material is permitted is shown on the drawings. The borrow area to be used is located approximately 2 miles offshore, at a distance approximately 8 miles southeast of the work area. The maximum allowable depth for removal of material from the entire borrow area is -51.0 feet NAVD 88. To cover the inaccuracies of the dredging process the Contractor may remove material in this borrow area to a depth not more than 1 foot below the maximum allowable depth. 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 Areas

The surveys of the borrow areas shown on the drawings are from surveys taken on 12 February 2004 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.

1.3.4 Commercial Fishing Equipment

The Contractor shall be aware that there is a potential for commercial fishing equipment (ie. conch pots, black seabass pots, and commercial gill nets), marked by buoys, that could be deployed within the borrow area at the time of dredging. The Contractor shall exercise caution to avoid this gear to the maximum extent practicable. If the gear cannot be avoided, the Contractor may proceed at risk to his own equipment. The Corps of Engineers or the sponsor (DNREC) or both will attempt to notify the commercial fishermen of the dredging operations and have them remove their fishing equipment prior to dredging.

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. In the areas where boardwalk is located within the Contractor's Work Limit, as shown on the drawings, the Contractor will not be allowed to stage equipment on the boardwalk.

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.

DGPS Positioning.

The DGPS positioning data shall be submitted to the Contracting Officer on a daily basis.

SD-02 Shop Drawings

Borrow Areas; 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.

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.

1.7 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.

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 Government.

3.3 MAINTENANCE OF DRAINAGE OUTFALLS

Prior to beachfill operations around the ends of outfalls, the Contractor shall wrap/cap the outfall ends, and post the outfall ends enabling them to be readily found after beachfill. Posts shall be 2-inch x 4-inch nominal wood posts. Outfalls shall then be buried during beachfill operations. Maintenance of drainage outfalls will be the responsibility of others.

3.4 REMOVAL OF EXISTING HANDICAP RAMP

Existing handicap ramps, at approximately Stations 52+00 and 72+00, shall be removed to the extent indicated on the contract drawings.

3.5 REMOVAL OF OTHER STRUCTURES

Except for the handicap ramps indicated above, all other existing structures, including, but not limited to, the volleyball poles and bases, will be removed by others.

3.6 Unexploded Ordnance

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 day 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.

3.7 PLACEMENT OF BEACHFILL

3.7.1 General

Beachfill material shall be placed between the groin located 1,200 feet north of Lake Avenue in Rehoboth Beach and beyond the southern end of Dewey Beach approximately 1,000 feet south of Collins Avenue. 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 38 mm (1.5 in) 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 -2.4 NAVD 88 (mean low water). No minus tolerance will be permitted, except below elevation -2.4 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.

3.7.2 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.

3.7.3 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 and at boardwalk entrances 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.

3.7.4 Placement of Beachfill Beneath Existing Beach Structures

Placement and grading of beachfill material by hand may be required beneath existing beach structures. The Contractor shall protect the existing beach structures from damage. Placement of beachfill material beneath structures shall be done in a manner that minimizes the ponding of water. If ponded areas are created due to the Contractor's operations the Contractor shall pump these areas dry at no expense to the Government. Any structures damaged shall be repaired at the expense of the Contractor.

3.7.5 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.

3.7.6 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.

3.7.7 Removal of Stakes and Markers

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

3.8 CONTRACTOR QUALITY CONTROL

3.8.1 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.

3.8.2 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.

3.8.3 Form Preparation

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

3.9 MEASUREMENT AND PAYMENT

3.9.1 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.

3.9.1.1 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.

3.9.1.2 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.

3.9.2 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.

3.9.3 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 Section 01720 SURVEY REQUIREMENTS and 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 -52.0 feet NAVD 88. Any deductions will be based on before-dredging surveys conducted immediately prior to dredging and after-dredging surveys conducted immediately following dredging. 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. 9, 10, and 11 (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.

-- End of Section --

SECTION 02446

SAND FENCE AND DUNE GRASS

PART 1 GENERAL

1.1 SCOPE OF SECTION

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

1.2 SUBMITTALS

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

The following shall be submitted:

SD-07 Certificates

Sand Fence. Dune Grass Plants and Seed.

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

The slats shall be No. I grade of White Cedar, Spruce, Douglas Fir or other approved species of wood substantially free from excessive wane, knots, decay, broken or short slats and unsquare ends. The slats shall be a full 3/8" thick by a full 1-1/2" wide by 4' high and unpainted. The wire shall be not less than 14 gauge with a zinc coating of not less than 0.3 oz./square foot of uncoated wire surface and it shall have a tensile strength of 65,000 to 80,000 psi. The slats shall be spaced 2 1/4" a part plus or minus 1/4". There shall not be less than 2 twists (one twist equals 360 degrees) of the wire between the slats. The five strands of wire shall be placed 10" apart and 4" from each end. The wire shall be woven in such a manner that the zinc coating shall not be removed nor the strength of the steel impaired. The fence shall be stretched after weaving and before being placed in rolls 50' in length.

2.2 DUNE GRASS

2.2.1 Plants

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

2.2.2 Seed

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

2.2.3 Fertilizer

Fertilizer shall be a controlled release form (5-6 month release) that supplies 60-80 pounds of Nitrogen per acre and 30-40 pounds of Phosphorous per acre in a one time application. Fertilizer shall be granular, 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 lashed to posts at the same locations as the picket bindings with an overhand knot of 14 gauge soft galvanized wire.

3.2 DUNE GRASS

3.2.1 General

The dunes shall be fertilized, planted, and seeded with beachgrass and 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 state at the time of planting. The plants shall be placed at the density indicated on the contract drawings. ***The controlled release fertilizer shall be applied (in a one-time application) by broadcasting over planted and seeded areas at a rate and grade formulation that supplies the specified fertilizer at the time of planting or within 30 days after planting. Care shall be exercised***

to avoid trampling and damaging beachgrass during planting and fertilizer application.

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 of seed (pure live seed) per acre. Seeds shall be planted 2.0 to 2.5 inches deep either by hand or by a mechanically operated drill or seeder. Care shall be exercised during panicgrass 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 seeds shall only be planted 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 work specified in this section for planting and seeding of dune grass will not be measured for payment. Payment for this work will be made at the contract lump sum price for "Dune Grass," Bid Item No. 7.

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 "Sand Fence," Bid Item No. 8. (All sand fence incidental to construction of dune crossovers shall be included in the unit prices for those dune crossovers.)

-- End of Section --