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SECTION 02391

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SECTION 02391

BEACH FILL

PART 1 GENERAL

1.1 SCOPE

The work covered by this section consists in furnishing all plant, labor, equipment, supplies and material, and in performing all operations in connection with excavating, transporting, and placing beach fill on the beaches as indicated on the drawings and specified herein.

1.2 REFERENCES

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

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 422	(1963; R 1998) Test Method for Particle-Size Analysis of Soils
ASTM D 4373	(1996) Standard Test Method for Calcium Carbonate Content of Soils
ASTM E 329	(2000; Rev. B) Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction
ASTM E 1527	(2000) Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP)

DEP-SOP-001/01	Florida Department of Environmental Protection Standard Operating Procedures, on web site <a href="http://www.dep.state.fl.us/labs/qa/sops.htm">www.dep.state.fl.us/labs/qa/sops.htm</a>
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1.3 SUBMITTALS

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

SD-01 Preconstruction Submittals

Environmental Sampling Plan for Contractor Supplied Upland Sand Source; G|PD

Within 14 days after the Notice of Award, the Contractor shall submit an Environmental Sampling Plan for any proposed beach fill source. Approval of the Plan will not relieve the Contractor of his responsibility to document pre-existing conditions and to avoid contaminating any portion of the beach placement area with substandard material. The Government will direct the Contractor to conduct environmental sampling at any point for the duration of the project, based on site conditions. A portion of the sampling will be required at the sand source and project beach prior to the Notice to Proceed. All sampling and laboratory results shall be provided within 14 days of notification to obtain samples. The Environmental Sampling Plan shall be in accordance subparagraph "General Requirements for Borrow Sources" of paragraph ENVIRONMENTAL QUALIFICATIONS below and shall include, but not be limited to, the following:

- a. Project drawings of the borrow site with proposed sampling locations shown on the drawings.
- b. Information on the certified laboratory or laboratories (names, addresses, and phone numbers) that will be utilized to conduct the testing.
- c. Methodologies and procedures for sampling and laboratory analysis.

Requirements for Radioactive Isotopes Reports; G|CO

The Contractor shall provide reports to the Contracting Officer demonstrating their evaluation of the radioactive testing requirements shown under paragraph Requirements for Radioactive Isotopes, Specification Section 02391, Part 2, PRODUCTS.

Construction and Grade Stakes Recovery Plan; G|AE

After the Notice to Proceed, the Contractor shall submit a Construction and Grade Stakes Recovery Plan. The Plan will outline the steps that the Contractor will implement to recover all the stakes used on the project. This Plan will include the use of an inventory log that will be made available for review by the appropriate Government personnel. A sample Plan is on the web site indicated in paragraph Construction Forms and Details below.

Plan of Processing Sand Mound Material and Laboratory Testing; G|AE

After the Notice to Proceed, the Contractor shall submit a Plan in accordance with the requirements listed in the paragraph below.

Processing and Placement of Sand Mound Material; G|CO

Fifteen days after the Notice of Award, the Contractor shall submit a Processing And Placement Of Sand Mound Material Plan to the Government for approval. The Plan shall include, but not be limited to, the following:

- a. The method of processing the sand to remove material greater than 3/4- inch diameter and reducing percentage of silt to below 2%.
- b. The method of placement to include the equipment used.
- c. Sampling plan with at least one sample taken daily off the beach of the most recently placed processed material.
- d. Storage and removal of refuse material from the processing operation site.
- e. Drawings clearly showing the layout of the processing and transport plan including stockpile areas.

Certification of Processed Material; FIO

Prior to placement of processed material on the beach, the Contractor shall provide the results of testing five random samples of his processed material for compliance with gradation requirements. An approved laboratory shall be used for analyzing samples.

Excavated Material Transportation Plan; G|COR

Within 14 days after the notice to proceed, the Contractor shall submit an Excavated Material Transportation Plan for any proposed beach fill source. Approval of the plan will not relieve the Contractor of his responsibility to meet Federal, State and local laws and regulations.

SD-04 Samples

Contractor Supplied Upland Sand Source Samples; G|ED

Within 10 days after Notice of Award, the Contractor shall furnish a 5-pound sample of the proposed beach fill material to Mr. Doug Rosen, CESAJ-EN-GG, of Jacksonville District USACE, telephone (904) 232-1617. Sample(s) shall be provided in sealed plastic containers, either jars or bags, and clearly marked with the name of the Contractor, the name of the source, and any other identifying information. The submitted sample shall be representative of the typical nature of the entirety of the proposed sand fill. The Government will retain the submitted samples.

SD-07 Certificates

Quality Control Sampling Program; G|ED

The Contractor shall furnish copies of the reports required by paragraph QUALITY CONTROL SAMPLING PROGRAM below to Mr. Doug Rosen, CESAJ-EN-GG, of Jacksonville District USACE (submittal), and Robin Trindell at the following address: Florida Fish and Wildlife Conservation Commission, Bureau of Protected Species Management, 620 S. Meridian Street OES-BPS, Tallahassee, Florida 32399-1600, or e-mail robin.trindell@fwc.state.fl.us.

Grade Stake Recovery; G|COR

After completion of the project, the Contractor shall provide a letter to the Contracting Officer certifying that all grade stakes have been recovered in accordance with the Contractor's approved Construction and Grade Stake Recovery Plan.

Notification of Discovery of Historical Period Shipwreck Sites

The Contractor shall immediately notify the Contracting Officer if any shipwreck, artifact, or other objects of antiquity that have scientific or historical value, or are of interest to the public, are discovered, located, and/or recovered.

Notice of Misplaced Material

The Contractor shall notify the U.S. Coast Guard Marine Safety Office of any misplaced material as stated in Clause OBSTRUCTION OF NAVIGABLE WATERWAYS of Section 00700 CONTRACT CLAUSES.

Construction and Grade Staking Log

The Contractor shall prepare and maintain a log to inventory all the stakes used in the construction of the project. The log shall include information concerning the location, installation, and recovery of all stakes. The Contractor shall make this log available for review by the appropriate Government personnel upon request. Upon completion of the project, the Contractor shall furnish the log to the Contracting Officer.

SD-08 Field Report

Condition Surveys; G|ED

The Contractor shall conduct pre- and final condition surveys of the project area and provide all data to the contracting officer. See paragraph CONDITION SURVEYS below.

1.4 ORDER OF WORK

Prior to any construction on the beach, the Contractor shall conduct a pre-condition survey as noted in the paragraph CONDITION SURVEYS below. The Contractor shall begin his filling operations at any point along the project beach upon completion and acceptance of the three new timber groins. Turbidity curtains shall be installed and maintained along the shore prior to commencement of any work. Once the Contractor's filling operations have begun, the Contractor shall maintain a continuous filling operation without any intervening gaps.

#### 1.5 HISTORICAL PERIOD SHIPWRECK SITES

If any shipwreck, artifact, or other objects of antiquity that have scientific or historical value, or are of interest to the public, are discovered, located, and/or recovered, the Contractor acknowledges that:

a. The site(s), articles, or other materials are the property of the State of Florida, with title vested in the Department of State, Division of Historical Resource; and that,

b. He shall immediately notify the Contracting Officer.

Refer to subparagraph "Preservation and Recovery of Historic, Archeological, and Cultural Resources" of Section 01355 ENVIRONMENTAL PROTECTION.

#### 1.6 FINAL CLEANUP

Final cleanup, as stated in the paragraph COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK of Section 00700 CONTRACT CLAUSES, shall include the removal of all of the Contractor's plant and equipment either for disposal or reuse. Plant and/or equipment to be disposed of shall ONLY be disposed of in a manner and at locations approved by the Contracting Officer. The Contractor shall be responsible for the removal of all debris associated with the Contractor's operations and work area activities. This includes the pipeline corridor, pumpout site, and borrow area. Unless otherwise approved in writing by the Contracting Officer, the Contractor will not be permitted to abandon pipelines, pipeline supports, pontoons, or other equipment in the disposal area, pipeline access areas, water areas, or other areas adjacent to the work site. Pilings and any other debris removed or created as a result of the execution of this contract shall be disposed of in a manner and at locations approved by the Contracting Officer.

#### 1.7 WORK AND ACCESS AREA

##### 1.7.1 Staging and Access Areas

Staging and access areas are shown on the contract drawings that have been identified for the Contractor's use. The final limits of the staging and access areas indicated on the drawings shall be field-determined by the Contracting Officer in coordination with the Local Sponsor and the Contractor. It shall be the responsibility of the Contractor to investigate and obtain any additional areas which may be necessary for his/her construction operations. The additional areas will be subject to

the approval of the Contracting Officer. The Contractor shall not use water access across the seagrass beds during this contract.

#### 1.7.2 Contractor Responsibilities

The Contractor shall exclude the public from the work area in the immediate vicinity of his operations. The Contractor shall install warning signs to warn the public and all commercial recreational boats of all construction activities. The Contractor shall be responsible for providing and maintaining all water and land access routes necessary for his equipment and plant to and from the work sites. The Contractor shall ascertain the environmental conditions which can affect water and land access, such as climate, terrain, winds, current, waves, swells, depths, shoaling, and scouring tendencies.

#### 1.8 ADJACENT PROPERTY AND STRUCTURES

Any damage to private or public property within the project boundaries, including staging site(s) and work and access areas/roads, shall be repaired promptly by the Contractor. Any damage as a result of the Contractor's operations shall be repaired at no cost to the Contracting Officer.

#### 1.9 PERMITS AND RESPONSIBILITIES

The Contractor's attention is directed to the Clause PERMITS AND RESPONSIBILITIES of Section 00700 CONTRACT CLAUSES and paragraph PERMITS AND AUTHORIZATIONS of Section 01355 ENVIRONMENTAL PROTECTION.

#### 1.10 WORK VIOLATIONS

Work done in violation of these specifications or a verbal or written stop order of the Contracting Officer will be considered as unsatisfactory progress for purposes of progress payments in accordance with Clause PAYMENTS UNDER FIXED-PRICE CONSTRUCTION CONTRACTS CLAUSES.

### PART 2 PRODUCTS

#### 2.1 SAND MOUND SAND SOURCE

##### 2.1.1 General

The character of the material in the Sand Mounds is indicated on the test pit laboratory data (designated TP) of Section 00320 GEOTECHNICAL DATA. Vegetation presently covers the sand mounds that will need to be removed from the area of excavation prior to using the sand. Excavation of the sand mounds shall only be to the existing ground elevation surrounding the excavation area, encouraging drainage away from the sand mound.

##### 2.1.2 Processing of Sand Mound Material

The sand used for beach fill shall be processed to remove all material coarser than 3/4 inch and to reduce the percentage of silt (0.063 mm or 230 sieve) below 2 percent. These requirements are stated in the State Permit.



The method of processing the sand shall be of the Contractor's design. The plan for accomplishing the above shall be submitted to the Government for approval. Before placing the sand on the beach, laboratory testing of representative samples shall be provided to the Government showing that 100 percent of material passes the 3/4 inch screen and not more than 2 percent passes the 230 sieve. If any sand placed on the beach does not meet this criteria, that sand shall be removed and replaced with sand that does.

## 2.2 CONTRACTOR-SUPPLIED UPLAND SAND SOURCE

This project allows use of a Contractor-supplied upland source of sand. No offshore sand sources shall be considered as an acceptable source. Any sand placed not conforming to these specifications shall be removed from the project site by the Contractor at no additional expense to the Government. A 5 pound sample of the Contractor supplied upland sand source shall be provided to the Government within 14 days of the Notice to Proceed. Laboratory test results confirming all characteristics of the sample, shown in paragraph CHARACTER OF MATERIAL shall accompany the submitted sample. The submitted sand sample will be used for verification laboratory testing of proposal submittals and for visual comparisons by Government inspectors during construction.

### 2.2.1 Sand Fill Material

The Contractor is responsible for providing a source, delivery and spreading of beach compatible sand that meets the following specifications. The sand supplied shall be naturally created. The sand may be processed, but manufactured sand is not allowed. Sand produced from crushed rock is considered manufactured sand and is not allowed. Contractor's offering blended sand shall submit a Blending Plan, showing the method the sand components will be thoroughly mixed before final placement on the beach. The existing beach sand shall not be mixed with sand delivered under this contract. The project requires the Contractor to propose sand with an average mean grain size of 0.30 millimeters (mm) to 0.55 mm. The sand will be placed and shaped on the beach to fill the construction template shown in the plans.

### 2.2.2 Character Of Material

The character of the sand to be supplied by the Contractor shall meet the following physical specifications:

a. Composed of quartz and/or calcium carbonate with no more than 5 percent sand of other mineralogical composition.

b. The calcium carbonate sand grains allowable under this specification are naturally occurring, durable and solid calcium carbonate grains. Many calcium carbonate grains have excessive internal pore space dramatically reducing the grains density and durability. Calcium carbonate grains delivered under this specification shall be 90 percent durable and solid calcium carbonate grains. Internal pore space shall not exceed 10 percent.

(1) Whole and broken mollusk shells from the beach

environment are durable and solid calcium carbonate grains. Due to the platy nature of shells and shell fragments, no more than 60 percent of the sand (quartz or calcium carbonate) shall be whole or broken shell. Unacceptable calcium carbonate grains include sand derived from benthic foraminifera, sponge spicules and halimeda.

c. Silt content (passing No. 230 sieve (0.063 mm)) of less than 2 percent.

d. The coarse grains must meet the following gradation limits:

(1) No more than 5 percent of the material retained on the #4 sieve (4.76 mm).

(2) Zero percent of the material retained on the 3/4 inch sieve (19.0 mm).

The gravel sized material must be distributed throughout the beach fill, and not be concentrated in isolated areas.

e. Average Mean Grain Size greater than or equal to 0.30 mm (1.74 phi) and less than 0.55 mm (0.86 phi).

f. Phi Standard Deviation values from 0.50 phi to 1.75 phi.

g. Free of debris, sharp rocks and pebbles, concrete rubble, clay, and organic material.

h. Sand color shall be similar to the existing beach. Based on the Munsell Soil Color Chart, color must be within the range:

HUE of: 2.5 YR, 5 YR, 7.5 YR, 10 YR, 2.5 Y, 5 Y  
CHROMA of: 1, 2, or 3  
VALUE of: 6, 7, or 8.

This color specification eliminates strongly colored or dark sand.

### 2.2.3 Calculation Of Average Mean Grain Size

The Mean Grain Size and Phi Standard Deviation shall be determined by Method of Moments Statistics calculated from sieve analysis of the proposed sand source. A Certified Testing Laboratory shall perform laboratory testing in accordance with ASTM D 422. The Method of Moments Statistics shall be calculated according to the instructions contained within this Section.

Mean Grain Size and Phi Standard Deviation are statistical measures of the textural character of a sample of sand, corresponding to the mean and standard deviation of a statistically normal population (i.e., sand grain sizes). Laboratory sieving of sand provides the data for calculation of the Mean Grain Size and Phi Standard Deviation. There are several methods of calculating these statistics. For the purposes of this contract, Mean Grain Size and Phi Standard Deviation shall be calculated by the Method of

Moments. The method of calculation is included in this Section. The Average Mean Grain Size refers to the average of the Mean Grain Sizes calculated for individual samples sieved in the laboratory. The Average Mean Grain Size shall be used to evaluate volume reduction for this contract.

#### 2.2.4 Grain Size Reporting

The grain size distribution information shall be based upon the sieve analysis specified in subparagraph "Laboratory Testing" below. Each sample test result shall be graphically represented by a gradation (cumulative frequency distribution) curve and a frequency distribution curve. All gradation curves shall be submitted on SAJ Form 2087 see paragraph CONSTRUCTION FORMS AND DETAILS below. All SAJ Form 2087 title information shall be filled out with project name, date, sample number, location sample obtained, Unified Soil Classification, percent silt passing the No. 200 sieve (0.074 mm), percent silt passing the No. 230 sieve (0.063 mm) and Method of Moments Mean Grain Size and Phi Standard Deviation. Each gradation curve shall state what Mean Grain Size class the sample meets, according to the Appendix B, Table 1. Frequency curves shall show percent retained on vertical axis and grain size, in millimeters on horizontal axis. The vertical axis shall use a fixed scale of 0 to 40 percent. For samples that contain information exceeding that scale, a vertical scale of 0 to 75 percent shall be used. An automatic scaling feature shall NOT be used for this curve. Frequency curves shall be identified by sample number and date, matching the corresponding gradation curve. A tabulation, on paper, of the laboratory results of weight retained, percent weight retained, and cumulative percent retained on each sieve shall be provided with each gradation curve. Tabulated grain size laboratory results shall also be reported in digital format in an Excel spreadsheet. Digital data shall be supplied not greater than on a weekly basis. Samples from the sand source shall be numbered consecutively. Samples from the project site shall be identified with the Acceptance Section, numbered consecutively for each Acceptance Section, and a station and range location.

#### 2.2.5 Laboratory Testing

All quality control samples shall be sieved according to ASTM D 422, using U.S. Standard sieves 3/4, 3/8, 4, 8, 16, 30, 40, 50, 70, 100, 140, 200, 230. The results of the sieve analysis shall be reported as specified in paragraph GRAIN SIZE REPORTING above. In addition, all quality control samples from the sand source shall include the following laboratory tests, with the results reported on each sample's gradation curve, and tabulated with each sample's sieve analysis tabulation:

- a. Calcium Carbonate Content in accordance with ASTM D 4373.
- b. Munsell Soil Color Chart evaluation of Hue, Chroma, and Value.
- c. Visual Estimate of Shell Content. This shall be accomplished by comparing the visual estimate of shell content on each sieve of the sieve analysis with standard laboratory visual percentage charts. The visual estimate of shell content for the entire sample shall be the weighted average of the individual visual estimates from each sieve.

#### 2.2.6 Certified Testing Laboratory

Certified Testing Laboratory refers to a geotechnical testing laboratory qualified under ASTM E 329 standards and certified by AASHTO (American Association of State Highway and Transportation Officials) National Voluntary Accreditation Program; or MMRL (AASHTO Materials Reference Laboratory accreditation); and, personnel qualified by NICET (National Institute for Certification of Engineering Technicians).

#### 2.2.7 Mean Grain Size And PHI Standard Deviation Calculation Using The Moment Method

The equations and discussion for calculating the Mean Grain Size and Phi Standard Deviation using the moment method are appended to the end of this Section (Appendix B).

#### 2.2.8 Quality Control Sampling Program

The Contractor shall perform sampling that includes no less sample collection than described in the following plan. The Contractor shall conduct all testing in a location accessible to Government inspectors. The Contractor shall include the sampling and testing procedure in his Contractor's Quality Control Plan. The Quality Control Plan shall include the name, address and point of contact for the Certified Testing Laboratory to be used for all grain size analysis. The location of the testing facility to be used for this contract shall also be included in the Quality Control Plan. Gradation test results shall be turned in daily with the daily quality control reports. Individual samples collected shall be approximately one half pound in weight and obtained from a single location. All laboratory test results shall be reported to the Government.

##### 2.2.8.1 Sampling at the Sand Source

Sand samples for laboratory testing shall be collected at the sand source at the rate of one sample for every 200 cubic yards of sand to be transported. Sampling and testing shall be completed before the sand is transported to the project site, and shall be representative of the sand being delivered to the project. Each day's samples Mean Grain Size and Phi Standard Deviation shall be averaged and the running average recorded on the gradation curve, along with the individual sample Mean Grain Size and Phi Standard Deviation. A new average shall be started each day. The Average Daily Mean Grain Size shall be used as an indicator for the Mean Grain Size for the sand proposed. No individual sample Mean Grain Size shall be less than 0.25 mm. Any materials not meeting the Mean Grain Size requirements shall not be transported to the project site.

##### 2.2.8.2 Sampling at the Project Site

Sand samples for laboratory testing shall be collected at the project site. Sand samples shall represent the fill material only, avoiding existing beach sand below the project fill. Sand samples shall be collected from each beach fill Acceptance Section. Sand samples shall be collected at the rate of one sample representing 100 cubic yards of sand delivered. The

samples shall be collected on a regular sampling grid covering an entire Acceptance Section, and the location recorded on the gradation curve. The plan of beach sampling shall be submitted with the Contractor's Quality Control Plan. All sample collection in an Acceptance Section shall be distributed temporally over the entire filling operation. Half of the samples shall be collected during filling of the Acceptance Section, when the fill is approximately less than half of the final grade. The second half of the samples shall be taken from the completed Acceptance Section. Samples shall not be collected from the surface, but 6 inches below the ground surface. Before an Acceptance Section is surveyed for final payment and accepted by the Contracting Officer, all sample laboratory analyses shall be completed and submitted to the Contracting Officer. All individual sample Mean Grain Size and Phi Standard Deviation shall be tabulated. The tabulation shall include sample identifying information including Acceptance Section, sample number and date.

#### 2.2.9 Environmental Qualifications

##### 2.2.9.1 General Requirements for Borrow Sources

It is important that any material to be used for a Dade County sand borrow source be considered to be as clean as what exists on Dade beaches or is normally used for playground quality sand. A Phase I HTRW (Hazardous Toxic and Radioactive Waste) Evaluation to meet the requirements of ASTM E 1527 on the borrow source material shall be submitted with the proposal as indicated in Section 00100A ADDITIONAL PROPOSAL PREPARATION/SUBMISSION INSTRUCTIONS. If the borrow site contains HTRW materials or is suspected of containing hazardous materials, fissionable materials, environmental contaminants or otherwise toxic materials it shall not be used as a borrow source. The Government will request the Contractor perform testing/sampling in accordance with what is provided below, and testing results be provided to the Government.

##### 2.2.9.2 Requirements for Radioactive Isotopes

Radiation levels and radioactivity content shall be measured for the borrow material and for beach area. The borrow area and the beach placement area shall be surveyed in a pattern approved by the Contracting Officer as described below. The background radioactivity and radiation levels (milli-roentgens/hour) of the borrow area vs. the beach site shall be compared. The levels of contaminant (radioactivity content in pico-curies/gram) in borrow material cannot exceed the mean levels existing at the beach placement area. If radioactivity levels of the source material exceed the mean naturally occurring radiation levels at the beach area, the site shall not be used as a borrow source. These radiological surveys and analysis shall consist of the following:

- (1) Radiation surveys are to be taken at the beach and borrow sites. These surveys shall be taken at waist level. Additionally, samples from the beach and borrow site shall be analyzed for radioactivity levels and be reported in pico-curies per gram. The measurements shall also fall within 1 standard deviation or suspect high values will be determined to be the most conservative representation of the results. The results of the radioactivity (pico-curies per gram) shall be

reported in graphical and tabular form.

(2) The resulting beach background radiation level shall not be increased by more than 20 micro-roentgens/hour. This is to be determined by gamma radiation surveys (with the probe at waist level) taken both before and after the beach material placement.

(3) Gamma spectroscopy analysis for Radium 236 shall be performed at the beach site and at the potential borrow site. The placement of borrow material shall not allow the resulting composite radioactivity at the beach (determined by the gamma spectroscopy) to increase by more than 5 pico-curies/gram.

(4) Methodology for radioactivity content to be used for individual sample analysis shall be EPA Method 9310 for alpha and beta emissions.

(5) Methodology for gamma spectroscopy analysis shall be submitted by the Contractor and approved by the Contracting Officer.

(6) The Contractor shall provide reports to the Contracting Officer demonstrating their evaluation of the above criteria and provide all data including all radiation values taken.

#### 2.2.9.3 Requirements for Environmental Contaminants

The Contractor shall provide laboratory reports to the Contracting Officer demonstrating their evaluation of the below criteria and provide all data including all chemical values determined. The data shall be provided in graphical and tabular format. It is anticipated that background level of contaminants for Dade County beaches is essentially zero or below detection limits. Should contaminants be detected in borrow material the levels of contaminant in borrow material cannot exceed the mean levels existing at the beach placement area in samples taken as described below. These measurements will consist of the following chemical testing of the borrow material and elutriates:

(1) Total Recoverable Petroleum Hydrocarbons (TRPH), EPA Method 9071B or EPA 8440

(2) Total Metals (those listed as Priority Pollutants), EPA 3050B/EPA 6010B, except Hg, EPA 7471A

(3) Volatile Halogenated Organics and Aromatic Hydrocarbons (BTEX), EPA 8021B

(4) Polynuclear Aromatic Hydrocarbons, EPA 8100

(5) Pesticides, EPA 8081, and PCB's, EPA 8082

(6) Herbicides (Chlorinated Herbicides 2,4-D and 2,4,5-TP), EPA 8151A

(7) Elutriate Preparation shall be by the method provided in EPA/CE 81-1. Testing for all above contaminants shall be performed on

elutriates.

(8) To ensure quality control (QC) and quality assurance (QA) of these procedures, work shall be conducted in accordance with DEP-SOP-001/01

If contaminant levels of the borrow material exceed the mean naturally occurring contaminant levels at the beach area, the site shall not be used as a borrow source. The measurements shall also fall within 2 standard deviation or suspect high values will be determined to be the most conservative representation of the results. Elutriate values shall be compared to State water quality standards to determine whether runoff will violate State standards.

#### 2.2.9.4 Sampling Locations for Environmental Contaminants

Samples to be taken for the above requirements shall be taken every 100 feet as needed in the beach placement area, for representative beach quality samples, and in spots considered to be representative of every 200 cubic yards of the borrow material. Representative samples from all sites shall be taken in a pattern and locations approved by the Contracting Officer.

### PART 3 EXECUTION

#### 3.1 CONDITION SURVEYS

##### 3.1.1 Pre-Condition Survey

Prior to any work being conducted on the beach, the Contractor using a professional land surveyor licensed in the state of Florida shall obtain a pre-condition survey of the project area. Beach profiles are to be taken at the Florida Department of Environmental Protection (FDEP) control monuments-R-84 (Azimuth 325°), R-85 (Azimuth 345°), R-86 (Azimuth 335°), and R-87 (Azimuth 335°). The profiles shall extend from the monument to 1,500 feet offshore according to the azimuths noted. The survey shall reference the construction datum, which is located at 1.30 feet below National Geodetic Vertical Datum of 1929 (NGVD). The coordinates shall be in feet and based on the Florida State Plane Coordinate System, East Zone (0901), Transverse Mercator Projection, North American Datum, 1927 (NAD27). Elevations and soundings shall be taken at abrupt changes in grade and at a distance not to exceed 25 feet apart. For each profile, the Contractor shall locate the edge of vegetation, the Mean High Water Line as established in the contract drawings, and the edge of seagrass. The Contractor shall submit the x-y-z data in FDEP format (See Appendix A.) and field notes to the Contracting Officer's Representative.

##### 3.1.2 Final Condition Survey

Upon completion of the project, the Contractor shall conduct a final survey of the beach in the same manner as referenced above. The Contractor shall provide digital and hardcopy data of the survey to the Contracting Officer's Representative.

### 3.2 EXCAVATION

#### 3.2.1 General

All excavation and handling operations for beach fill shall be performed in a manner that complies with all applicable Federal, State, and local laws. All excavation for beach fill using the sand mounds shall be performed within the limits of the borrow areas shown on the drawings. Vegetation shall be removed from the sand in areas of excavation and disposed of in a manner acceptable to the Contracting Officer. Topsoil shall be stockpiled in a manner acceptable to the Contracting Officer. Existing conditions are represented on the survey in the drawings and core boring logs appended to the end of Section 00320 GEOTECHNICAL DATA. Excavation shall be performed in a uniform and continuous manner so as to avoid creating multiple holes, valleys or ridges. The depth of excavation of the sand mounds shall not extend below the adjacent terrain. Positive drainage shall be maintained at all times. If the Contracting Officer determines the quality of beach fill is adversely affected, that location shall be avoided.

#### 3.2.2 Turbidity

The Contractor shall place and maintain turbidity curtains along the beach during filling operations to prevent dispersion of sediments into seagrass beds. Filling operations shall be done in a manner that will minimize turbidity of the water at the discharge from the fill area. If monitoring shows turbidity exceeds the background at the compliance stations by more than 29 NTU's, construction activities shall cease immediately and not resume until corrective measures have been taken and turbidity has returned to acceptable levels.

#### 3.2.3 Deduction for Nonconforming Work

Beach fill that is obtained from unauthorized areas will not be paid for under this contract. Excavation in such area(s) is a violation of State of Florida Permits for this work. If it is determined that excavation has been performed outside the permitted borrow area(s), the quantity of the material excavated from these areas will be computed and subtracted directly from the pay quantity of material placed on the beach.

### 3.3 Excavated Material Transport Plan

#### 3.3.1 General

The method of transporting the fill from the borrow area (s) to the fill area shall be approved by the Contracting Officer.

#### 3.3.2 Upland Transport

The Contractor is responsible for obtaining all permits, licenses, easements, and rights-of-way required for transport or staging of equipment and materials.

### 3.4 BEACH FILL



All beach fill sand excavated from the borrow area shall be transported to and deposited on the beach within the lines, grades, and cross section shown on the drawings except as may be modified by the provisions of subparagraph b. of subparagraph "Construction" below. Except as specified in subparagraph "Dressing for Payment" below, the Contractor shall maintain and protect the fill in a satisfactory condition at all times until acceptance of the work. Any fill sand which is lost in transit or permitted to flow into the offshore waters or onto the upland from the point the sand is discharged on the beach will not be subject to payment.

3.4.1 General

3.4.2 Construction

a. Prior to placement of fill, the Contractor shall remove from the site of the work all snags, driftwood, and similar debris lying within the foundation limits of the beach fill section. All materials removed shall be disposed of in areas provided by and at the expense of the Contractor and approved by the Contracting Officer. Any groins within the fill area shall be adequately ramped over by the Contractor to prevent damage thereto by the Contractor's equipment. Grading and other construction equipment will not be permitted outside the easement lines shown on the drawings except for designated ingress and egress to and from the site.

b. The excavated material shall be placed and brought to rest on the beach to the lines, grades, and cross section indicated on the drawings, unless otherwise provided for herein or directed by the Contracting Officer. The beach is subject to changes and the elevations on the beach at the time the work is done may vary from the elevations shown on the drawings. The Contracting Officer reserves the right to vary the width and grade of the berm from the lines and grades shown on the plans in order to establish a uniform beach for the entire length of the project. The beach fill cross sections shown on the drawings are for the purpose of estimating the theoretical amount of fill needed and will be used by the Contracting Officer in making any change in the lines and grades. The Contractor will not be required to dress the fill below the mean high water to the slopes shown but will be required to do the dressing specified in subparagraph "Dressing for Payment" below.

c. Construction staking on the beach shall be made of steel pipe or other material that can and will be removed intact after filling as verified during final walk-through inspection. The Contractor shall inventory all the construction staking used on the project in a manner acceptable to the Contracting Officer.

d. Grade stakes and any other stakes for any purpose shall be made of steel pipe that can and will be removed intact after filling to cross sections accepted by or as directed by the Contracting Officer. All stakes shall have sufficient length above grade so they may not be accidentally covered by fill. The Contractor shall consecutively number each piece of pipe used for grade stakes, shall clearly mark that number upon the pipe, and shall record the location of each

numbered pipe in a grade stake log. The removal of each numbered pipe shall be recorded in the grade stake log at the time of the pipe/stake removal. At the request of the Contracting Officer, all of the grade stake pipes shall be displayed after their removal to demonstrate those pipes that have been removed. All pipes used for grade stakes placed within the limits of the beach fill work shall be numbered and shall be recorded in the log. It is the Contractor's responsibility to track, locate, and completely remove all grade stakes in their entirety to the satisfaction of the Contracting Officer.

e. As the work progresses, dikes or mounds may be constructed along the beach as necessary to avoid transverse gullying directly from the discharge point to the ocean, and to build the new berm to design grade. The Contractor will not be held responsible for erosion caused by waves after the beach fill has been satisfactorily placed. No undrained pockets shall be left in any fill during or upon completion of the work. Groins, bulkheads, revetments, piers, dune walkovers, seawater pipe structures, and other structures within the fill section shall be protected by the Contractor to prevent damage thereof by the Contractor's operations. Any damages assessed as a result of any of the above items shall be at the Contractor's expense.

f. Mechanical operations may be needed to place material to the required lines and grades. Stockpiling, additional longitudinal dikes, and/or other special handling may be needed. It is the Contractor's responsibility to place material to the specified lines and grades within the fill crossed section.

h. Any material that is rehandled or moved and placed in its final position by method other than hydraulic shall be placed in horizontal layers not exceeding three (3) feet in thickness. Compaction of the layers will not be required. The Contractor shall schedule his operations to take advantage of the tide so that filling is done in the dry or as direct.

#### 3.4.2.1 Sand Flooding

If the sand is placed in a state that is not completely saturated by hydraulic placement, the Contractor must saturate the dry placed sand to effect consolidation equal to hydraulic placement. No more than 100 cubic yards of sand at a time shall be placed on the beach without saturating. Enough water must be used to completely saturate the sand, not less than 100 gallons of water shall be available for each cubic yard of sand placement. Runoff water shall be controlled so as not to run off the project limits on the upland side and not to run directly to the ocean forming gullies, eroding the fill sand.

#### 3.4.3 Dressing for Payment

Immediately following placement of the new beach fill the Contractor shall grade, level and dress the beach fill to meet the required elevations and dimensions indicated on the drawings. The dressing for payment shall include the removal of humps, depressions, undrained pockets, excavated material at locations of swales for drainage culverts, and vehicle access

ramps, etc., prior to final pay survey being taken of an area of Acceptance Section.

#### 3.4.4 Dressing for Final Acceptance

Immediately upon the completion of beach fill placement and removal of equipment and materials from the beach fill area, the final dressing shall be accomplished by the Contractor for final acceptance. This final dressing is a requirement as part of the post-construction cleanup and prior to the sand compaction measurements required by Section 01355 ENVIRONMENTAL PROTECTION of the contract. The bank caused by wave forces shall be graded down to slope not steeper than 1 vertical to 10 horizontal. Grade stakes shall be removed intact and any excavation required to remove the stakes shall be backfilled.

#### 3.4.5 Tolerances

Final grade (F.G.) shall be within tolerances of plus or minus five-tenths (0.5) of a foot of beach fill grade line. Any material placed above the prescribed tolerances may be left in place at the discretion of the Contracting Officer; however this material will not be included in the pay quantities.

#### 3.4.6 Misplaced Materials

If any material is deposited other than in places designated or approved, the Contractor may be required to remove such misplaced material and redeposit it where directed at his expense.

#### 3.4.7 Work Area

The construction easements and borrow area limits available to the Contractor for accomplishing the work are shown on the drawings. The contractor shall allow access for others to work at the nursery or exclude it from the construction area fencing. At the fill site, The Contractor may only operate within the work areas shown on the drawings. The Contractor shall exclude the public from the work areas in the immediate vicinity of his excavating, transporting, stockpiling, and disposal operations.

#### 3.4.8 Construction Access

Construction access is provided as shown on the contract drawings. Procurement of additional access routes for ingress and egress to the construction area shall be obtained by and at the expense of the Contractor and shall be approved by the Contracting Officer. At all access sites to be utilized, the Contractor shall:

- a. Photo-document the condition of the access location prior to disrupting the site.
- b. Limit access width through existing vegetation to 20 feet or less.
- c. Replace any fencing, signage or curbing disturb by the Contractor's activities; and,

d. Restore and vegetate the access route with native dune plants subject to the approval of the Contracting Officer. Revegetation of access and staging areas shall be with sod (non-dune areas or viable plant units (dune area) at 18 inch maximum spacing with species and diversity equivalent to preconstruction conditions. Revegetation shall include a survival warranty of 90 percent of the plant material for 90 days. Vegetation shall be installed with fertilization and irrigation, or with initial irrigation, fertilization and approved water-absorbent polymeric gels, at no additional expense to the Government. Shrubs and trees shall be replaced to preconstruction conditions per the requirements of section 01355 ENVIRONMENTAL PROTECTION.

### 3.5 NOISE CONTROL

#### 3.5.1 Hauling and Excavating Equipment Other Than Dredges and Booster Pumps

All hauling and excavating equipment, other than dredges and booster pumps, used on this work shall be equipped with satisfactory mufflers or other noise abatement devices. The Contractor shall conduct his operations so as to comply with all Federal, State, and local laws pertaining to noise.

a. Sound pressure measurements shall be made with a sound level meter and shall be reported to the Contracting Officer under provisions for the Contractor Quality Control.

b. Sound pressure measurements shall be made at distances of 50 feet, 100 feet, 300 feet, and 500 feet from each major piece of equipment such as draglines, dump trucks, dewatering pumps, pneumatic drills, bulldozers, etc., at locations approved by the Contracting Officer. The measurements shall be made by personnel qualified to make such measurements and whose credentials have been verified by the Contracting Officer. The measurements shall be taken during operations every 4 weeks. Temperature, atmospheric pressure, and general weather conditions shall also be recorded with the measurements.

### 3.6 QUALITY CONTROL

The Contractor shall establish and maintain quality control for operations under this section to assure compliance with contract requirements and maintain records of his quality control for materials, equipment, and construction operations, including but not limited to the following:

#### 3.6.1 Preparatory Inspection

(To be conducted prior to commencing work.)

a. Check location of borrow area, and conditions of beach areas to be filled.

b. Discuss plan of action for excavating, transporting, and placing fill on beach.

c. See that all equipment is approved and is in satisfactory

working condition.

- d. Check safety requirements and, particularly, public safety.
- e. Check the beach site for structures that could be susceptible to damage or which could have further damage caused by the Contractor's activity.

### 3.6.2 Initial Inspections

(To be conducted after a representative sample of the work is complete.)

- a. Check for proper lines, grades, and elevations.
- b. See that diking and fill discharge is satisfactory.
- c. Check grades and slopes of fill placement.
- d. Check finished area for proper dressing and elimination of undrained pockets and abrupt humps.
- e. Check any adjacent structures to search for damage by Contractor's equipment.

### 3.6.3 Follow-up Inspection

(To be conducted daily to assure compliance with results of initial inspection.)

- a. Check items mentioned in preparatory and initial inspection.
- b. Damage or defects.

A copy of these records, as well as results of corrective action taken, shall be furnished the Government as directed by the Contracting Officer.

## 3.7 INSPECTION

### 3.7.1 Quality Assurance Representative (QAR)

The QAR shall be notified prior to the establishment of horizontal control work (baseline layout, ranges, station flags, shore-based control for EPS/RPS, etc.) and vertical control work (tide staff(s), upland cross sections, construction elevations top/invert, etc.), but the presence or absence of the QAR shall not relieve the Contractor of his responsibility for proper execution of the work in accordance with the specifications.

## 3.8 CONSTRUCTION FORMS AND DETAILS

From the Jacksonville District Home Page, click the links ORGANIZATION, ENGINEERING, then CONSTRUCTION FORMS AND DETAILS. See web site address [www.saj.usace.army.mil/cadd/eng/construction\\_forms\\_and\\_details.htm](http://www.saj.usace.army.mil/cadd/eng/construction_forms_and_details.htm)

3.9 X-Y-Z DATA IN FDEP FORMAT

See APPENDIX A at the end of this Section (2 pages)

3.10 UPLAND SAND SOURCE CALCULATION

See APPENDIX B at the end of this Section (3 pages).

-- End of Section --