SOUTH PONTE VEDRA BEACH DUNE RESTORATION PROJECT

ST. JOHNS COUNTY, FLORIDA

TECHNICAL SPECIFICATIONS

Prepared for:

ST. JOHNS COUNTY
500 San Sebastian View
St. Augustine, Florida 32084

Prepared by:

ATKINS
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THIS DOCUMENT SUPERSEDES THE PREVIOUS TECHNICAL SPECIFICATIONS SIGNED ON OCTOBER 29, 2021.

Engineer of Record:
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This item has been electronically signed and sealed by Justin A. Bartusek on the date adjacent to the seal using a SHA authentication code. Printed copies of this document are not considered signed and sealed and the SHA authentication code must be verified on any electronic copies.

JUSTIN ADAM BARTUSEK LICENSE No. 88808 STATE OF FLORIDA PROFESSIONAL ENGINEER

Justin A. Bartusek

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SUMMARY OF WORK

PART 1 GENERAL

1.1 PROJECT INFORMATION

a. Project Name: South Ponte Vedra Beach Dune Restoration Project
b. Owner: St. Johns County (County), 500 San Sebastian View, St. Augustine, Florida 32084
c. Engineer: The contract documents were prepared for this project by Atkins North America, Inc (Atkins). Atkins will be managing and overseeing construction operations on behalf of the County.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

1.2.1 Project Description

The project work consists of nourishing approximately 5 miles of beach and dune in South Ponte Vedra Beach. Material will be dredged from an offshore borrow site, Site N-3, and transported and placed on the beach between Florida Department of Environmental Protection (FDEP) Range Monuments, R-76 and R-103.5, to the permitted lines and grades shown on the drawings. The work also consists of tilling, dune planting, post and rope installation, and environmental monitoring.

1.2.2 Location

The work is located on the east coast of Florida in St. Johns County, Florida, approximately 8 miles north of St. Augustine Inlet.

1.2.3 Work Restrictions

See Section 32 92 19 DUNE VEGETATION PLANTING for restrictions regarding the planting of dune vegetation, and Sections 01 57 20 ENVIRONMENTAL PROTECTION and 35 20 25 BEACH FILL for restrictions regarding environmental compliance, dredging, and beach fill.

1.3 COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK

a. The Contractor shall commence work within thirty (30) days of receipt of Notice to Proceed. The phrase “commence work” refers to mobilization efforts including submission of pre-construction submittals, surveying, equipment mobilization, etc. The Contractor must prosecute the work diligently, without pause, until completion. Project pauses that require equipment to be demobilized for other business will not be allowed.

b. Work will be permitted 24 hours per day, 7 days per week, including holidays See Section 35 20 25 for noise restrictions.
c. Beach fill operations, including beach tilling and final acceptance must be complete by June 30, 2022. Equipment demobilization, dune planting, and close out efforts must be complete by July 30, 2022.
d. There is no prescribed order of work for this project. See Section 35 20 25 BEACH FILL.

1.4 PHYSICAL DATA

1.4.1 Physical Conditions

The physical conditions described in the project drawings and specifications are the result of hydrographic, topographic, and visual surveys and/or core borings representative of conditions existing at the time the data was collected. The data from these site investigations is available for Contractor review.

1.4.2 Weather, Water Stage, and Tide Data

The Contractor should investigate for himself the conditions that can be encountered at the project location. It is the Contractor's responsibility to assess weather, water stage, and tide conditions and schedule for adverse weather in order to meet the schedule described in paragraph 1.4 COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK of this section.

1.4.3 Contractor Investigation

It is the Contractor's responsibility to perform their own investigation to confirm information depicted in the project plans and specifications. Any required modifications to achieve the intent of the design by the Contractor should be brought to the attention of the County in accordance with Section 01 45 05 CONTRACTOR QUALITY CONTROL.

1.4.4 Maritime Traffic

Marine traffic in the project area consists of commercial, pleasure, and small recreational vessels of all types and sizes.

1.4.5 Surveys

Electronic survey files are available for Contractor review. Survey data is depicted in the project drawings. The following surveys are available:

a. Hydrographic multibeam survey of Borrow Area N-3 – July 12-13, 2021
b. Hydrographic and topographic beach profile surveys of R-75.5 to R-104 – July 12-13, 2021
c. Hydrographic and topographic beach profile surveys of R-75.5 to R-104 – December 2-4, 2021

1.5 LAYOUT OF WORK

1.5.1 Established Project Control

Information concerning the location and elevations of the established monuments used for field surveys can be found on sheet G-100 of the project plans. Additional information regarding project control can be found in the Survey Notes section of the plan sheet.

1.5.2 Layout

The Contractor is responsible for establishing the layout of work based on the monuments, control data, and elevations established in the contract documents. The layout – specifically the landward limit of fill tie-in, is subject to modification by the County in order to accommodate changes in site conditions that may occur during the time that passes between design and construction.

1.6 DAMAGE TO WORK

1.6.1 During prosecution of work, the Contractor is obligated to take reasonable precautions and exercise sound construction practices in order to prevent damage to the work or adjacent structures. Any damage as a result of the Contractor's failure to do so must be repaired at no expense to the County. However, if any part of the project work is damaged due to circumstances beyond the Contractor's control, including flood, earthquake, hurricane, or tornado, the County may request the Contractor make the necessary repairs at the applicable contract unit price.

1.7 TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER

1.7.1 In order for the County to grant a time extension for unusually severe weather, the following must be true:

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

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

c. The determination of whether conditions were unusually severe will be made based on a comparison of observed weather conditions during the project performance, compared to the 30-year climate normals from the National Oceanic and Atmospheric Administration (NOAA) Climate Data Online website. The Climate Data Online website (http://www.ncdc.noaa.gov/cdo-web/) published by NOAA's National

Centers for Environmental Information (formerly the National Climatic Data Center) in Asheville, North Carolina contains climatological and meteorological data relevant to this region. Available data includes quality controlled daily, monthly, seasonal, and yearly measurements of temperature, precipitation, wind, and degree days as well as radar data and 30- year climate normals.

1.7.2 The Contractor is responsible for documenting the occurrence of unusually severe weather days on their daily QC reports. In order for a day to be considered an unusually severe weather day, the weather delay must prevent work on critical activities for more than 50 percent of the day and be accompanied by documentation – weather reports, craft advisories, or similar.

1.8 DOCUMENT HIERARCHY

Project Specification Hierarchy: Elements under this contract shall be constructed utilizing the following information in the hierarchy listed below:

a. Contractor Agreement between Owner and Contractor
b. Project permits, authorizations, and leases
c. Technical Specifications
d. Approved Project Drawings

Any discrepancies identified between information listed above shall be coordinated and resolved with the County.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END SECTION 01 11 00

SECTION 01 22 00

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 SUMMARY

This section describes how Line Items will be measured and paid for when making progress and final payments. Work to be measured and applicable measurement procedures are described in their respective specification sections. For work that does not have a specific Line Item such as, but not restricted to, quality control, safety, and vibration and environmental monitoring, allocate costs proportionally across appropriate Line Items.

1.2 VARIATION IN ESTIMATED QUANTITIES

a. All unit-priced items in this contract are estimated quantities. If the actual quantity of any unit-priced items varies more than fifteen percent (15%) above or below the estimated quantity, an equitable adjustment in the contract price shall be made upon demand of either party. The equitable adjustment shall be based upon any increase or decrease in costs due solely to the variation above 115% or below 85% of the estimated design quantity.

b. If the quantity variation is such as to cause an increase in the time necessary for completion, the Contractor may request in writing, an extension of time, to be received by the County within 10 days from the beginning of the delay. Upon the receipt of a written request for an extension, the County shall ascertain the facts and make an adjustment for extending the completion date if, in the judgement of the County, such extension is justified.

c. If the County deems it necessary, the Contractor shall provide justification for any equitable adjustments requested by the Contractor.

1.3 JOB PAYMENT ITEMS

1.3.1 Mobilization (Line Item 01)

Payment will be made for costs associated with and incidental to mobilization and establishment of initial project management and coordination.

1.3.2 Relocation Trawling Mobilization and Demobilization (Line Item 08)

Payment will be made for costs associated with or incidental to mobilization and demobilization for sea turtle trawling and relocation. This line item will be used only as directed by the County.

1.3.3 Public Access Dune Fencing and Signage (Line Item 05)

Payment will be made for costs associated with or incidental to provision and installation of dune fencing and signage as described on the project plans and Section 02 83 20 DUNE PROTECTION of these specifications.

1.3.4 Demobilization (Line Item 11)

Payment will be made for costs associated with and incidental to demobilization including final acceptance of beach, acceptance of dune plant installation, and approval of all closeout submittals.

1.4 UNIT PRICE PAYMENT ITEMS

1.4.1 Beach Fill (Line Item 02)

a. Measurement – Cubic Yard (CY)

Acceptance: Beach profile lines perpendicular to the construction baseline at spacing not to exceed 100 feet and at each point of inflection (PI). Cross section plots will be used for acceptance of beach sections.

Payment: Payment quantities for beach fill will be based upon material placed within the payable limits of beach fill described in Section 35 20 25 BEACH FILL. Quantities will be computed by calculating the volume between the Before Dredge survey and After Dredge survey within the limits of the fill template using Average End Area method. Payment surveys will be the same as the acceptance surveys described above. Additional volume calculations including dig volume at the borrow area, estimated haul volume, or fill volume placed outside of the prescribed template will not be considered for payment.

Surveys used for acceptance and payment purposes will be conducted by Gahagan & Bryant Associates, Inc. (GBA) under contract to the County.

b. Payment – payment will be made for costs associated with and incidental to the excavation, transportation, and placement of beach fill which is satisfactorily placed within the payable limits of the beach fill template described in Section 35 20 25 BEACH FILL. Incidental items to be included in the beach fill unit price include but are not limited to barricades and signs, temporary construction facilities as described in Section 01 50 02 TEMPORARY CONSTRUCTION FACILITIES, sand ramp construction, constructing the beach profile and final dressing, noise control, and survey.

1.4.2 Beach Tilling (Line Item 03)

a. Measurement – Acre

Beach tilling will be measured for payment by actual area tilled to the tenth of an acre.

b. Payment
Payment will be made for costs associated with and incidental to beach tilling which is satisfactorily performed in accordance with Section 01 57 20 ENVIRONMENTAL PROTECTION.

1.4.3 Dune Planting (Line Item 04)

a. Measurement
Number of viable plant units that satisfy specification and requirements.

b. Payment
Payment will be made for costs associated with provision, installation, and warranty maintenance of sea-oats and associated dune plants. Separate or additional payment will not be made for repairs or replacements of vegetation that the Contractor conducts under warranty requirements. Cost to replant and restore to pre-construction conditions all construction accesses and staging areas should be included in Mobilization/Demobilization (Line Item 01) and is not included in the Dune Planting contract line item.

1.4.4 Screening of Unacceptable Material (Line Item 06)

a. Measurement – Cubic Yard (CY)
Separation of trash, debris, and other unacceptable material will be measured for payment by the volume of material screened. The volume in the bid schedule is provided for bidding purposes only and will be determined on actual volume screened. The volume will be measured for payment by multiplying the estimated area to be screened by the average excavation depth. This line item will be used only as directed by the County. Variation in Estimated Quantity described in paragraph 1.2 does not apply to this line item.

b. Payment
Payment will be made for costs associated with and incidental to separation of trash, debris, and other unacceptable material to be encountered by a method to be determined by the contractor and approved by the County.

1.4.5 Transport and Disposal of Unacceptable Material (Line Item 07)

a. Measurement – Cubic Yard (CY)

Transportation and disposal of material (greater than ¾ inches in diameter) will be measured for payment by the quantity disposed. This line item will be used only as directed by the County. The estimated volume in bid schedule is provided for bidding purposes only and will be determined on actual quantity disposed of. Truck haul tickets will be used for the purpose of quantity estimation. Variation in Estimated Quantity described in paragraph 1.2 does not apply to this line item.

b. Payment

Payment will be made for costs associated with and incidental to transportation and disposal of material (greater than ¾ inches in diameter) that is screened by method to be determined by the Contractor and approved by the County. See Section 35 20 25 BEACH FILL.

1.4.6 Relocation Trawling (Line Item 09)

a. Measurement – Day

Sea Turtle Trawl Sweeping and Relocation will be measured for payment based upon the duration of performance on a daily basis. A day of trawl sweeping is defined as 24-hours of trawling. The Contractor shall conduct trawl sweeping and relocation as described in Paragraph "Sea Turtle Trawl Sweeping and Relocation" in Section 01 57 20 Environmental Protection. This line item will be used only as directed by the County. Variation in Estimated Quantity described in paragraph 1.2 does not apply to this line item.

b. Payment

Payment will be made for costs associated with or incidental to the Sea Turtle Trawl Sweeping and Relocation. This price shall include all costs for furnishing labor, equipment, fuel, oil, materials, and supplies required for trawl sweeping to clear and/or relocate sea turtles from the vicinity of the dredge and shall include the cost of reporting as specified. See Section 01 57 20 Environmental Protection. If performance of this line item is not required or implemented, no payment will be made to the Contractor for this line item.

1.4.7 Standby Time (Line Item 10)

a. Measurement – Hour

Measured to the nearest half hour that the plant is not in operation by request of the County. Tracking of standby time directed by the County shall be reported on the Contractor's daily QC reports.

b. Payment

Standby time for dredging and beach fill operations will be paid for each hour or partial hour that the plant is not in operation by request of the County. Payment will be made for costs associated with or incidental to standby of the dredge plant only upon implementation of this line item. The time in the bid schedule is provided for bidding purposes only and will be determined on actual standby time implemented. Variation in Estimated Quantity described in paragraph 1.2 does not apply to this line item.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END SECTION 01 22 00

SECTION 01 30 00

ADMINISTRATIVE PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

Project management and coordination activities shall be the responsibility of the Contractor. The cost for furnishing labor, equipment, and materials required to plan and execute project operations will not be paid under separate line item.

1.2 PROJECT MEETINGS

The following meetings are required under this project:

a. Preconstruction Conference – held prior to the start of construction, within 30 days of Notice to Proceed (NTP). The County will coordinate the preconstruction conference and notify the Contractor of time, place, and agenda. It is the Contractor's responsibility to notify his personnel, including subcontractors and suppliers, to attend. Minutes taken by the County will be supplied to the Contractor for review and signature. Signed minutes will become part of the project record. The following shall be submitted to the County at least 15 days prior to the preconstruction conference.
   i. Project Schedule
   ii. Contractor Quality Control Plan
   iii. Environmental Protection Plan (EPP)
   iv. Environmental and Turbidity Monitor Qualifications
   v. Draft Turbidity Sampling Map

b. Preparatory and Initial Phase Meetings – held prior to and after the start of each definable feature of work. See Section 01 45 05 CONTRACTOR QUALITY CONTROL for more details.

c. Progress Meetings – held weekly by the Contractor. The Contractor shall schedule and preside over progress meetings to review at a minimum the following
   i. Work progress. During sand placement, this will include information on stations where fill placement operations are complete, where fill operations are ongoing, and which are ready for the post-placement pay survey.
   ii. Schedule – 2 week look ahead
   iii. Issues

iv. Status of submittals and RFIs
v. Testing
vi. Safety
vii. Environmental Control
viii. Sand quality, per permit requirements
ix. Upcoming work
x. Progress payment status
xi. Other business as appropriate

d. The Contractor is responsible for ensuring the appropriate personnel are in attendance of the progress meeting. The Contractor shall take meeting minutes and distribute within one day after the meeting.

1.3 NOTICE TO PROCEED

Following receipt of NTP, if the Contractor has failed to submit and receive acceptance and/or approval of specified plans, including, but not limited to, Contractor Quality Control Plan - Section 01 45 05 CONTRACTOR QUALITY CONTROL, and Environmental Protection Plan - Section 01 57 20 ENVIRONMENTAL PROTECTION, or has not yet received the County's conditional approval to work under an interim plan, the Contractor shall not proceed with the work and shall consider the work to be suspended. If the Contractor does not submit an acceptable plan within a reasonable time, as determined by the County, the County may order the Contractor to suspend work. Any suspension order issued for the Contractor's failure to submit an acceptable plan will not constitute unreasonable delay and the Contractor will not be entitled to an equitable adjustment of either performance period or contract price.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END SECTION 01 30 00

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

This section covers submittal procedures, submittal types, tracking, and review periods for submittals required under this contract.

1.2 SUBMITTAL TYPE

a. Preconstruction Submittal (PC) – required prior to start of work; includes schedules, data, information, etc. Preconstruction submittals must be submitted no later than 30 calendar days after Notice to Proceed (NTP) unless otherwise stated in Section 01 30 00 ADMINISTRATIVE PROCEDURES or other sections in these specifications.

b. Shop Drawings (SD) – drawings, diagrams, and schedules specifically prepared to illustrate some portion of the work.

c. Product Data (PD) – catalog cuts, illustrations, schedules, diagrams, performance charts, instructions and brochures illustrating size, physical appearance and other characteristics of materials or equipment for some portion of the work. Samples of warranty language.

d. Test Reports (TR) – report demonstrating finds of a test made at the job site or official testing laboratory of a material, equipment, prototype, or sample as required by this contract.

e. Certificates (C)– document required of a Contractor, or of a supplier, installer, or subcontractor through Contractor, the purpose of which is to further quality of orderly progression of a portion of the work by documenting procedures, acceptability of methods, or personnel qualifications.

f. Closeout Submittals (CS) – documentation to record compliance with technical or administrative requirements.

1.3 SUBMITTALS

1.3.1 Preconstruction submittals

a. Submittal Register: The Contractor should provide, for approval by the County, an updated Submittal Register as part of the preconstruction submittal package.

b. Transmittal Form: The Contractor should submit a sample transmittal form to use for submittals to the County.

1.4 SUBMITTAL CLASSIFICATION

a. County Approved – submittals requiring approval by the County prior to proceeding with the associated task.
b. Information Only – submittals not requiring County approval.

1.5 GENERAL

All submittals must be reviewed and approved by the Contractor's Quality Control Manager prior to submission to the County.

1.6 SUBMITTAL REGISTER

The submittal register at the end of this section outlines the submittals required under these specifications. It is the Contractor's responsibility to ensure that the submittal register submitted as part of the preconstruction submittals includes all relevant submittals, including any additional submittals that may be required over the course of the work. The Contractor should update the submittal register as necessary.

1.7 SCHEDULING

The Contractor is responsible for scheduling submittals with sufficient time for County review prior to delivery, mobilization, or execution of applicable work. If any work is performed prior to written approval by the County of the respective submittal, the Contractor assumes any risk associated with that work. The Contractor should allow up to 15 calendar days for review of submittals requiring County approval.

1.8 SUBMITTAL PROCEDURES

1.8.1 Submittal Review Codes

Submittals requiring County approval will be reviewed and returned to the Contractor with one of the following designations:

A – Approved as submitted (complete)
B – Approved with comments (complete)
C – Approved except as noted (requires resubmission)
D – Not approved, see comments (requires resubmission)

1.8.2 Electronic Correspondence

All correspondence and contract related documents shall be submitted in searchable Portable File format (PDF) with the only exceptions being those stated at the end of this paragraph. Any documents that require signature shall be submitted in PDF format with signature. Minimum scan quality shall be 150 dpi. The County will discuss electronic correspondence procedures at

Preconstruction and Coordination Meetings. These procedures may include sending files by e-mail, a Contractor provided FTP site, a website indicated by the County at the Preconstruction Conference, or other methods approved by the County. The Contractor will be responsible for the cost of the electronic media. E-mail correspondence does not have to be provided in PDF format.

END SECTION 01 33 00

Submittal Register

South Ponte Vedra Beach Dune Restoration Project

Contract Number:

Contractor:

Spec Section	Paragraph	Description	Submittal Type	Schedule	Date Submitted	Approval Status	Date Approved
01 45 05	1.5	Quality Control Plan	PC	15 days prior to Precon			
01 45 05	3.5	Project Schedule	PC	15 days prior to Precon			
01 45 05	3.4	Contractor Quality Control Report	TR	Daily			
01 50 02	1.2.1	In-water and Upland Staging Area Plan	PC	Within 30 days of NTP			
01 50 02	1.2.1	Pre-mobilization Site Inspection	PC	Within 30 days of NTP			
01 50 02	3.2	Maintenance of Traffic (MOT) Plan	PC	Within 30 days of NTP			
01 50 02	1.6.2	Demobilization Site Inspection	CS	Within 15 days of demob			
01 55 10	1.2.1	Clearing Area and Disposal Plan	PC	Within 30 days of NTP			
01 57 20	1.7	Environmental Protection Plan	PC	15 days prior to Precon			
01 57 20	3.1.5	Turtle Deflector Device	SD	Within 30 days of NTP			
01 57 20	3.1.5	Endangered Species Observer Qualifications	C	15 days prior to Precon			
01 57 20	3.1.5	Marine Turtle Monitor Qualifications	C	15 days prior to Precon			
01 57 20	3.1.5	Shorebird Monitor Qualifications	C	15 days prior to Precon			
01 57 20	3.1.5	Marine Turtle Permit	C	15 days prior to Precon			
01 57 20	3.1.5	Trawl Supervisor Qualifications	C	30 days prior to mob			
01 57 20	3.1.5	Logs/Final Summary Report	CS	Within 15 days of demob			
01 57 20	3.1.5	Project Environmental Summary Sheet	CS	Within 15 days of demob			
01 57 20	3.1.5	Trawl Sweeping Daily Logs	CS	Within 15 days of demob			
01 57 25	1.3	Turbidity Monitor Qualifications	PC	15 days prior to Precon			
01 57 25	3.2.2	Draft Turbidity Sampling Map	PC	Within 30 days of NTP			
01 57 25	3.2.2	Turbidity Monitoring Report	TR	Daily			
02 22 13	1.2	Vibration Control Specialist	PC	Within 30 days of NTP			
02 22 13	1.2	Vibration Control Specialist Alternate	PC	Within 30 days of NTP			
02 22 13	1.2	Vibration Monitoring Technician	PC	Within 30 days of NTP			
02 22 13	1.2	Structural Inspection/Evaluation Engineer	PC	Within 30 days of NTP			
02 22 13	3.2	Preconstruction Structural Survey	PC	30 days prior to mob			
02 22 13	1.3	Vibration Control Plan	PC	Within 30 days of NTP			
02 22 13	3.5	Vibration Monitoring Report	TR	Weekly			
02 22 13	3.4	Daily Instrument Logs	TR	Daily			
02 22 13	3.6	Post-Construction Structural Survey	TR	Within 15 days of demob			
02 83 20	2.1	Description of Details of Materials	PD	30 days prior to installation			
02 83 20	1.1.2	Certificate of Compliance	C	30 days prior to installation			
32 92 19	3.1	Dune Vegetation Planting Plan	PC	Within 30 days of NTP			
32 92 19	1.3	Irrigation Plan	SD	Within 30 days of NTP			

Submittal Register

South Ponte Vedra Beach Dune Restoration Project

Contract Number:

Contractor:

Spec Section	Paragraph	Description	Submittal Type	Schedule	Date Submitted	Approval Status	Date Approved
32 92 19	2.1	Dune Vegetation	PD	30 days prior to installation			
32 92 19	1.3	Certificate of Compliance	C	30 days prior to installation			
32 92 19	3.6	Dune Vegetation Report - Installation	CS	Within 15 days of demob			
32 92 19	3.6	Dune Vegetation Warranty Report	CS	30 days of warranty completion			
35 20 25	3.1	Dredging and Beach Fill Plan	PC	Within 30 days of NTP			
35 20 25	1.2	Construction and Grade Stake Recovery Plan	PC	Within 30 days of NTP			
35 20 25	1.2	Progress Maps	SD	Daily			
35 20 25	3.3	Dredge Tracking Plot	SD	Weekly			
35 20 28	1.2	Letter of Nation DQM Program Certification	PC	Within 30 days of NTP			

SECTION 01 45 05

CONTRACTOR QUALITY CONTROL

PART 1 GENERAL

1.1 REFERENCES

1.1.1 EM 385-1-1 – USACE Safety and Health Requirements Manual

1.2 SUBMITTALS

1.2.1 Preconstruction Submittals

a. Quality Control Plan

b. Project Schedule

1.2.2 Test Report

a. Daily Quality Control Report

1.3 PAYMENT

Separate payment will not be made for providing and maintaining an effective Quality Control (QC) plan, and all costs associated therewith shall be included in the applicable unit or lump-sum prices contained in the Bid Schedule.

1.4 QUALITY CONTROL ORGANIZATION

1.4.2 QC Manager

a. The Contractor must provide a QC Manager at the work site to implement and manage the QC program. In addition to implementing and managing the QC program, the QC Manager may perform the duties of project superintendent, project manager, or project engineer.

i. The QC Manager is required to conduct the QC meetings, perform the three phases of control described in subpart 3.2 of this section, perform submittal review and approval, ensure testing is performed, and provide QC certifications and documentation required in this Contract.

ii. The QC Manager is responsible for managing and coordinating the three phases of control and documentation performed by others.

iii. The QC Manager must be an individual with a minimum of five (5) years combined experience as a superintendent, inspector, QC Manager, project manager, or construction manager on similar size and type construction contracts which included the major trades that are part of this Contract.

iv. The individual must be familiar with the requirements of the EM 385-1-1 and have experience in the areas of hazard identification and safety compliance.
v. Submit the qualifications of the proposed QC Manager for approval with the Quality Control Plan.

1.5 QUALITY CONTROL PLAN

1.5.1 Provide, for acceptance by the County, a QC plan that covers both on-site and off-site work and includes the following with a table of contents listing the major sections identified.

a. QC ORGANIZATION: A chart showing the QC organizational structure and its relationship to the production side of the organization.
b. NAMES AND QUALIFICATIONS: In resume format, for each person in the QC organization. Include copies of all referenced certifications.
c. DUTIES, RESPONSIBILITIES AND AUTHORITY OF QC PERSONNEL: For each person in the QC organization.
d. REPORTING PROCEDURES: Including proposed reporting formats, timelines/schedules, and sample reports.
e. TESTING PLAN AND LOG: A Testing Plan and Log that includes the tests required under this Contract, referenced by the specification paragraph number requiring the test, the frequency, and the person responsible for each test.
f. LIST OF DEFINABLE FEATURES OF WORK: A Definable Feature of Work (DFOW) is a task, which is separate and distinct from other tasks, that has the same control requirements and work crews. The list shall be cross-referenced to the Contractor's Construction Schedule and the specification sections. For projects requiring a Progress Chart, the list of definable features of work shall include, but not be limited to, all items of work on the schedule.
g. PROCEDURES FOR PERFORMING THREE PHASES OF CONTROL: For each DFOW, provide Preparatory and Initial Phase Checklists. Each list shall include a breakdown of quality checks that will be used when performing the quality control functions, inspections, and tests required by the Contract documents. The preparatory and initial phases shall be conducted with a view towards obtaining quality construction by planning ahead and identifying potential future problems. Refer to subpart 3.2 of this section.

1.5.2 Notify the County in writing prior to proposed personnel or QC Plan procedure changes. Proposed changes are subject to approval by the County.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 GENERAL

The Contractor is responsible for establishing and implementing a quality control program.

3.2 THREE PHASES OF CONTROL

3.2.1 Preparatory Phase

a. Notify the County at least two (2) working days in advance of each preparatory phase meeting. Conduct the preparatory phase meeting with the superintendent and the foreman responsible for the DFOW. Provide accommodations for the County's representative(s) to participate in preparatory phase meetings. Document the results of the preparatory phase actions in the daily QC Report and in the QC checklist. Perform the following prior to beginning work on each DFOW:

   i. Review each paragraph of the applicable specification sections;
   ii. Review the contract drawings;
   iii. Verify that appropriate shop drawings and submittals for materials and equipment have been submitted and approved. Verify receipt of approved factory test results, when required;
   iv. Review the testing plan and ensure that provisions have been made to provide the required QC testing;
   v. Examine the work area to ensure that the required preliminary work has been completed;
   vi. Examine the required materials, equipment, and sample work to ensure that they are on hand and conform to the approved shop drawings and submitted data;
   vii. Review safety plans to ensure that applicable safety requirements are met, and that required Safety Data Sheets (SDS) are submitted; and
   viii. Discuss specific controls used and the construction methods and approach that will be used to provide quality construction by planning ahead and identifying potential problems for each DFOW.

3.2.2 Initial Phase

a. Notify the County at least two (2) working days in advance of each Initial Phase meeting. When construction crews are ready to start work on a DFOW, conduct the Initial Phase meeting with the foreman responsible for that DFOW. Observe the initial segment of the work to ensure that it complies with

Contract requirements. Document the results of the Initial Phase in the daily QC Report and in the QC checklist. Perform the following for each DFOW:

i. Establish the quality of workmanship required;
ii. Resolve conflicts; and
iii. Ensure that testing performed is adequate and timely.

3.2.3 Follow-up Phase

a. Perform the following for on-going work daily, or more frequently as necessary, until the completion of each DFOW and document in the daily QC Report and in the QC checklist:

i. Ensure the work is in compliance with Contract requirements;
ii. Maintain the quality of workmanship required;
iii. Ensure that testing is adequate and timely; and
iv. Ensure that rework items are being corrected.

3.3 COMPLETION INSPECTION

3.3.1 Post-Construction Measurement and Inspection

As the Contractor approaches completion of each acceptance section, notify the County to conduct After Dredge surveys. The Contractor should spot check grading for beach placement to confirm the beach fill meets the lines and grades required by the contract drawings. All survey data collected will be processed and provided to the Contractor at the Contractor's request.

3.3.2 Pre-Final Inspection

The County and QC Manager will perform this inspection to verify contract compliance for demobilization of temporary facilities and staging areas have been adequately restored. A County pre-final punch list may be developed as a result of this inspection. The QC Manager shall ensure that all items on this list are corrected prior to notifying the County that a Final Acceptance Inspection with the County can be scheduled. Any items noted on the Pre-Final Inspection shall be corrected in a timely manner and shall be accomplished before the Contract completion date for the work or any particular increment thereof if the project is divided into increments by separate completion dates.

3.3.3 Final Inspection

The QC Manager, superintendent, or other Contractor management personnel and the County will be in attendance at this inspection. The Final Acceptance Inspection will be formally scheduled by the County based upon results of the Pre-Final Inspection. Notice shall be given to the County at least five (5) days prior to the Final Acceptance Inspection. The notice shall state that all specific items previously identified to the Contractor as being unacceptable will be complete by the date scheduled for the Final Acceptance Inspection. Failure of

the Contractor to have all Contract work acceptably complete for this inspection will be cause for the County to bill the Contractor for the County's additional inspection cost.

3.4 DOCUMENTATION

The Contractor shall maintain current records providing factual evidence that required QC activities and/or tests have been performed. Records shall be produced daily in the form of **daily Quality Control Reports** and shall be submitted to the County no later than 3pm of the following day. These records shall include the work of subcontractors and suppliers and shall be on an acceptable form that includes, as a minimum, the following information:

a. Contractor/subcontractor and their area of responsibility;
b. Operating plant/equipment with hours worked, idle, or down for repair;
c. Work performed each day, giving location, description, and by whom;
d. Test and/or control activities performed with results and references to specifications/drawings/permits requirements to include material verification protocol. The control phase shall be identified (Preparatory, Initial, Follow-up). List of deficiencies shall be noted, along with corrective action;
e. Quantity of materials received at, or removed from, the site with statement as to acceptability, storage, and reference to specifications/drawings requirements; to include truck counts of material taken to the final disposal;
f. Submittals and deliverables reviewed, with contract reference, by whom, and action taken;
g. Offsite surveillance activities, including actions taken;
h. Job safety evaluations stating what was checked, results, and instructions or corrective actions;
i. Instructions given/received and conflicts in plans and/or specifications; and
j. Contractor's verification statement certifying the authenticity of the report.

3.5 PROJECT SCHEDULE

3.5.1 No less than 15 days prior to the Preconstruction Conference the Contractor shall submit for approval by the County a project schedule. The schedule should represent all work under the contract performance period.

3.5.2 The Contractor must provide schedule updates each month or with each progress payment request, whichever occurs more frequently. The updated schedule will allow the County to assess and track the Contractor’s work progress.

3.6 NOTIFICATION OF NON-COMPLIANCE

The County will notify the Contractor of any detected non-compliance with the foregoing requirements. The Contractor shall take immediate corrective action. If the Contractor fails or refuses to correct the non-compliant work, the County will issue a non-compliance notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the County may issue an order stopping all or part of the work until satisfactory corrective action has been taken. The Contractor shall make no part of the time lost due to such stop orders the subject of claim.

END SECTION 01 45 05

SECTION 01 50 02

TEMPORARY CONSTRUCTION FACILITIES

PART 1 GENERAL

1.1 SUMMARY

1.1.1 This section includes requirements for staging areas, temporary utilities, construction aids, vehicular access and parking, support facilities, and security and protection.

1.2 SUBMITTALS

1.2.1 Pre-construction submittals

a. In-water and Upland Staging Area Plan

i. The Contractor should indicate locations of their proposed in-water and upland staging areas, including any additional access or staging areas not indicated on the drawings. If the Contractor plans on obtaining additional access/staging areas, submit proposed drawings depicting the areas for County approval.

b. Pre-mobilization Site Inspection

c. Maintenance of Traffic (MOT) Plan

1.2.2 Closeout Submittals

a. Demobilization Site Inspection

1.3 EXISTING UTILITIES

1.3.1 The contractor is responsible for investigating the availability of utilities at the project site. The Contractor is responsible for providing all utilities necessary to perform their work. All stationary equipment, such as generators, shall be situated with the exhaust pointing seaward.

1.4 WORK AND ACCESS AREA

1.4.1 Staging and Access Area

a. The following staging areas and access points, as shown on the plans, have been provided by the County for use on this project:

i. North Staging and Access Area between R-83 and R-84 on the west side of Hwy A1A shown on the project plans. Address below.

2700 South Ponte Vedra Blvd.
Ponte Vedra Beach, FL 32082

ii. South Staging and Access Area north of R-95 on the east side of Hwy A1A shown on the project plans. Address below.

2993 South Ponte Vedra Blvd.
Ponte Vedra Beach, FL 32082

b. The Contractor may choose to utilize alternate staging and/or access area(s). In such an event, the Contractor will be responsible for identifying the alternate location(s) and procuring permission from property owner as well as all necessary local, state, and federal authorizations for use of the same.

1.4.2 Contractor Responsibilities

a. The Contractor is responsible for identifying and procuring permission and/or authorizations for all alternative upland and in-water staging and storage areas.
b. All floating plant and equipment must be properly marked, and adequate lighting installed in accordance with US Coast Guard standards. No equipment shall be staged in areas not approved by the County as part of the Staging Area Plan.
c. It is the responsibility of the Contractor to exclude the public from their work area.
d. Prior to mobilization of equipment to the project site, the Contractor must submit to the County a Pre-mobilization Site Inspection. The Pre-mobilization Site Inspection shall consist of photographic documentation of each staging area and site access. Each photograph shall be date- and time-stamped and be geographically referenced. Photos should provide adequate detail to determine the existing conditions at the site.
e. After removal of the Contractor's equipment and restoration of the site is complete, the Contractor must submit to the County a Demobilization Site Inspection. The Demobilization Site Inspection shall consist of photographic documentation of each staging area and site access used by the Contractor. Each photograph shall be date- and time-stamped and be geographically referenced. If the County determines that the Contractor has caused damage to the site or surrounding structures that have not been repaired by the Contractor, the Contractor will be required to restore the site to pre-mobilization conditions or better at the Contractor's expense prior to final payment. Once the Contractor has submitted a Demobilization Site Inspection for a staging or storage area, the Contractor will not be allowed to return to the site with equipment unless otherwise approved by the County.

1.4.3 Adjacent property and structures

a. The Contractor is not permitted to damage private or public property or structures during his operations. Any damage caused by the Contractor will require prompt repair at the Contractor's expense.

1.4.4 Permits and responsibilities

a. The County has an agreement in place with FDEP for use of the North Staging Area (2700 S. Ponte Vedra Blvd.) and has received permission from the County Parks Department for use of the South Staging Area (2993 S. Ponte Vedra Blvd.). The Contractor is responsible for obtaining any permits or authorizations necessary for use of in-water or alternate upland staging areas and site accesses.

1.5 BRIDGE-TO-BRIDGE COMMUNICATION

1.5.1 In order that radio communication may be made with other vessels in the vicinity, all vessels engaged in work under this contract shall monitor very high frequency (VHF) Channels 13 and 16 at all times.

PART 2 PRODUCTS

2.1 TEMPORARY SIGNAGE

2.1.1 The Contractor shall post temporary signs to give the public warning and caution of construction hazards. Attach signs to perimeter fencing requiring unauthorized persons to keep out of the site and maintain a safe distance from moving equipment.

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

3.1.1 Identification of Employees: Contractor and subcontractor personnel must wear identifying markings on hard hats clearly identifying the company for whom the employee works. The Contractor is responsible for ensuring only authorized personnel are allowed to enter the work site and are in compliance with the Contractor's safety procedures including use of appropriate Personal Protective Equipment (PPE) and in accordance with the EM-385-1-1.

3.1.2 Employee Parking: Employee vehicles must be parked in designated areas, away from construction and heavy equipment. The Contractor is responsible for maintaining parking areas to pre-construction conditions, free of ruts, holes, and puddles.

3.1.3 Onsite Information: A copy of the contract drawings, specifications, permits, and other contract documents must be kept on the dredge and fill sites at all times.

3.2 PROTECTION AND MAINTENANCE OF TRAFFIC

3.2.1 The Contractor shall submit a Maintenance of Traffic (MOT) Plan for approval by the County prior to the arrival of equipment to the project site. The plan should be in accordance with Florida Department of Transportation's (FDOT) Temporary Traffic Control (TTC) and St Johns County Temporary Traffic Control (TTC)/Maintenance of Traffic (MOT) Policy. It is the responsibility of the Contractor to determine whether their operation will require FDOT permits or approvals and to ascertain such if necessary.

During construction the Contractor shall provide access and temporary relocated roads as necessary to maintain traffic. The Contractor shall maintain and protect traffic on all affected roads during the construction period except as otherwise specifically directed by the County. Measures for the protection and diversion of traffic, including the provision of watchmen and flagmen, erection of barricades, placing of lights around and in front of equipment and the work, and the erection and maintenance of adequate warning, danger, and direction signs, shall be as required by the State and local authorities having jurisdiction. The traveling public shall be protected from damage to person and property. The Contractor's traffic on roads selected for hauling material to and from the site shall interfere as little as possible with public traffic. The Contractor shall investigate the adequacy of existing roads and the allowable load limit on these roads. The Contractor shall be responsible for the repair of any damage to roads caused by construction operations.

3.3 CONTRACTOR'S TEMPORARY FACILITIES

3.3.1 Fencing for Staging Area – for the north staging area, the Contractor shall provide and install temporary six-foot chain link fence around the entirety of the utilized area that is currently not fenced. All material and equipment should be stored within the fenced area when not in use. In addition to chain link fence, the Contractor shall install temporary silt fencing as shown in the contract drawings, to prevent trash, debris, and material from entering waters of the State.

3.3.2 Maintenance of Storage Area – maintain staging and storage areas in clean, neat condition.

3.3.3 Waste Storage – the Contractor is responsible for providing suitable dumpsters for waste containment. Dumpsters should be covered to prevent windblown trash. Dumpsters should be emptied as necessary to prevent overflow of trash and debris. No waste will be allowed to be stockpiled near dumpsters.

3.4 ACCOMMODATIONS FOR INSPECTORS

The Contractor shall furnish at the beach fill site for use by the County, a desk inside a climate-controlled office trailer with access to power and a color printer capable of

printing on 11”x17” paper. The Contractor should furnish suitable transportation between a landside pick up location approved by the County and the dredge or beach fill whenever conditions allow.

3.5 RESTORATION OF STAGING AREA

After removal of all equipment and materials from the staging area, the Contractor shall remove temporary fencing from the site. All areas used by the Contractor must be restored to pre-construction or better conditions. This may include grading, laying topsoil, re-paving, and/or seeding.

END SECTION 01 50 02

SECTION 01 55 10

CLEARING AND GRUBBING FOR ACCESS AND STAGING AREAS

PART 1 GENERAL

1.1 SCOPE

This section covers all work and materials necessary to perform operations associated with clearing, grubbing, and transporting of material for access only as indicated on the drawings and specified herein.

1.2 SUBMITTALS

1.2.1 Preconstruction

a. Clearing Area and Disposal Plan

Prior to the start of clearing and grubbing, the Contractor should submit a plan detailing any areas that need to be cleared for staging and access, how the Contractor intends to dispose of cleared materials, and the Contractor's plan for restoration (if applicable).

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 PROTECTION

3.1.1 Roads and Walks

Maintain roads and sidewalks in preconstruction condition, free of dirt and obstructions, at all times.

3.1.2 Trees, Shrubs, and Existing Park Facilities

The Contractor is not permitted to remove or damage any trees, shrubs, or existing facilities for the purposes of staging and beach access. The Contractor shall protect existing facilities, gazebos, walkways, and signs at the designated staging and access areas. Any damage caused by the Contractor shall be restored prior to final acceptance and closeout.

3.1.3 Utility Lines

Existing utility lines shall be protected. The Contractor must notify the County immediately if any damage to existing utilities occurs. It is the responsibility of the Contractor to make themselves familiar with any existing utilities in the area prior to mobilization of equipment. There are known power lines that cross the north and south beach access points. It is the Contractor's responsibility to ensure their equipment is capable of safely moving in the vicinity of the known utility lines or make accommodations otherwise.

3.2 WORK AREA

The Contractor shall clearly delineate his work area during clearing and grubbing operations and exclude the public from that area. A barrier preventing public access to areas where large equipment will be in use shall be erected and maintained throughout the clearing and grubbing activities.

3.3 DISPOSAL OF MATERIALS

All material from the clearing and grubbing operations including stumps, roots, logs, and brush, shall be disposed of by the Contractor at an off-site facility approved by the County. No separate payment will be made to the Contractor for tipping fees, royalties, or similar that may be required for the disposal of such material.

END SECTION 01 55 10

SECTION 01 57 20

ENVIRONMENTAL PROTECTION

PART 1 GENERAL

1.1 SCOPE

This section covers the protection of the environment from damage as a result of construction operations under this contract. For the purpose of this specification, environmental protection is defined as the retention of the environment in its natural state to the greatest possible extent during project construction and to enhance the natural appearance in its final condition. Environmental protection requires consideration of air, water, and land, and involves noise, solid waste-management, and other pollutants. Environmental protection also requires consideration to protection of threatened and endangered species. In order to prevent any environmental pollution arising from the construction activities in the performance of this Contract, the Contractor and their Subcontractors shall comply with all applicable Federal, State, and local laws and regulations concerning environmental pollution control and abatement. No separate payment will made for activities described under this section. All costs associated with environmental protection shall be included in the unit cost item the Contractor deems most applicable.

1.2 QUALITY CONTROL

The Contractor is responsible for maintaining quality control for protection of the environment. Any deficiencies or problems associated with the Contractor's ability to comply with law, regulations, and ordinances related to environmental protection should be documented on the Contractor's daily QC reports along with any corrective action taken.

1.3 PERMITS AND AUTHORIZATIONS

The Contractor is required to comply with all requirements of each permit, lease, authorization, or license required for construction of this project, including but not limited to the following permits and agreements already procured by the County:

a. Florida Department of Environmental Protection Permit No. 0340616-003-JC
b. Department of the Army Permit No. SAJ-2018-00349
c. Bureau of Ocean Energy Management Agreement No. OCS-A 0533

1.4 SUBMITTALS

1.4.1 Preconstruction

a. Environmental Protection Plan

1.4.2 Shop Drawings

a. Turtle Deflector Device

1.4.3 Certificates

a. Endangered Species Observers Qualifications – Hopper Dredge
b. Marine Turtle Monitor Qualifications
c. Shorebird Monitor Qualifications
d. Marine Turtle Permit
e. Trawl Supervisor Qualifications

1.4.4 Closeout Submittals

a. Logs/Final Summary Report
b. Project Environmental Summary Sheet
c. Trawl Sweeping Daily Logs

1.5 SUBCONTRACTORS

It is the Contractor's responsibility to ensure that all subcontractors are in compliance with the Environmental Protection section of these specifications.

1.6 NOTIFICATIONS

The County will notify the Contractor in writing of any observed non-compliance with federal, state, or local environmental laws or regulations, permits, and other elements of the Contractor's Environmental Protection Plan (EPP), described in paragraph 1.7 of this section. After receipt of such notice, the Contractor shall inform the County of the proposed corrective action and take such action when approved by the County. The County may issue an order stopping all or part of the work until satisfactory corrective action has been taken. Time extensions or additional payments will not be granted for delays related to environmental protection.

1.7 ENVIRONMENTAL PROTECTION PLAN

The Contractor shall submit an Environmental Protection Plan (EPP) for review and acceptance by the County. No physical work may start until the EPP has been approved or specific authorization is obtained to start a phase of work. The EPP shall include the following:

a. A list of Federal, State, and local laws, regulations, and permits concerning environmental protection, pollution control, and noise abatement that are applicable to the Contractor's proposed operations and the requirements imposed by those laws, regulations, and permits.
b. Methods for protection of features to be preserved within authorized work areas. The Contractor shall prepare a listing of methods to protect resources needing protection and minimize adverse impacts to these resources, i.e., air and water quality, fish and wildlife, soil, historical, archeological, and cultural resources.

c. Procedures to be implemented to provide the required environmental protection and to comply with the applicable laws and regulations. The Contractor shall provide written assurance that immediate corrective action will be taken to correct pollution of the environment due to accident, natural causes, or failure to follow the procedures set out in accordance with the EPP.
d. Water Quality Plan detailing means and methods for preventing violation of state regulations for water quality at both the dredge site and fill site.
e. Contaminant Prevention Plan where the Contractor shall specify all potentially hazardous substances to be used on the job site and intended actions to prevent accidental or intentional introduction of such materials into the air, ground, water, wetlands, or drainage areas. The plan shall specify the Contractor's provisions to be taken to meet Federal, State, and local laws and regulations regarding labeling, storage, removal, transport, and disposal of potentially hazardous substances. The Contractor shall have available for County review, Safety Data Sheets (SDS) for any hazardous substances used on the project.
f. Spill Control Plan for hazardous, toxic, or petroleum material. The Spill Control Plan shall include the procedures, instructions, and reports to be used in the event of an unforeseen spill of a substance regulated by the Emergency Response and Community Right-to-Know Act or regulated under State or local laws or regulations.
g. Debris Management Plan in which the Contractor shall identify methods and locations for solid waste disposal. The Debris Management Plan shall include sources and expected types of debris, debris separation and retrieval methods, and debris disposal methods.
h. Borrow area plan to include operational plan to achieve protection of sea turtles during hopper dredge operations.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 PROTECTION OF ENVIRONMENTAL RESOURCES

3.1.1 General

The Contractor should minimize disturbance to the existing environment within and outside the project footprint. The protection of vegetative, topographic, and drainage pattern features should be protected to the extent possible.

3.1.2 Protection of Land Resources

The Contractor is not allowed to remove or destroy land resources including trees, shrubs, vines, grasses, topsoil, and landforms without written permission from the County.

a. Fuel, oil, and lubricants shall be managed so as to prevent spills and evaporation. To prevent spills, fuel dispensers shall be fabricated with double-walled construction or be placed within a containment vessel having sufficient capacity of 1.5 times the volume of the primary dispenser. Containment pans shall be constructed of 16-gauge metal with borders banded up and welded at corners right below the bibb. Edges of the pans shall be 8-inch minimum in depth to ascertain that no contamination of the ground takes place. Pans shall be cleaned by an approved method immediately after every dispensing of fuel and wastes disposed of offsite in an approved area. Should any spilling of fuel occur, the Contractor shall immediately recover the contaminated ground and dispose of it offsite in an approved area.

3.1.3 Preservation and Recovery of Historic, Archeological, and Cultural Resources:
There are no known historic, archeological, or cultural resources within the Contractor's work area. If during construction activities, items are observed that may have historic or archaeological value (e.g., anchors, shipwrecks, Native American human remains, or associated objects), such observations shall be reported immediately to the County so that the appropriate authorities may be notified, and a determination made as to their significance and what, if any, special disposition of the finds should be made. The Contractor shall cease all activities that may result in impact to these resources until the County directs the Contractor to resume work. The Contractor shall prevent his employees from trespassing on, removing, or otherwise disturbing such resources

3.1.4 Protection of Water Resources
The Contractor should plan their work to avoid impacts to water resources including exceedance of turbidity standards and pollution of surface, ground water, and wetlands. Refer to Section 01 57 25 TURBIDITY AND DISPOSAL MONITORING. The Contractor shall prevent fuel, oil, or other hazardous substances from entering any body of water.

3.1.5 Protection of Fish and Wildlife Resources

a. Listed Species Protection – Special Operating Conditions
All vessels associated with the construction project shall operate at "Idle Speed/No Wake" at all times while in the immediate project area and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels shall follow routes of deep water whenever possible.

The Contractor is responsible for all on-site project personnel and shall require them to observe water-related activities for the presence of marine turtles and manatee(s). All in-water operations shall be immediately shut down if a marine turtle or manatee comes within 50 feet of the operation. For unanchored vessels, operators shall disengage the propeller and drift out of the potential impact zone. If drifting would jeopardize the safety of the vessel, then idle speed may be used to leave the potential impact zone. Activities shall not resume until the animal(s) has moved beyond the 50-foot radius of the project operation, or until 30 minutes elapses if the animal(s) has not reappeared within 50 feet of the operation. Animals shall not be herded away or harassed into leaving.

In order to minimize impingement or entrainment of marine turtles within the water column, dredging pumps shall be disengaged by the operator, or the draghead bypass valve shall be open and in use when the dragheads are not firmly on the bottom.

The offshore borrow area, located in federal waters, is within a seasonal management area (SMA), defined by the National Oceanic and Atmospheric Administration (NOAA) between November 1, and April 30. All on-site project personnel associated with a project including the vessel captain, crew, and PSO on all vessels over 33-ft in length will be instructed on the presence of North Atlantic right whale and other species listed in the Endangered Species Act (ESA) and the requirements to observe, avoid, and report North Atlantic right whale in the area.

Speed requirements must be followed if a North Atlantic right whale has been spotted or reported within 38 nautical miles (nm) of the vessel as defined in the table below. North Atlantic right whale presence may be determined by observers on the vessel, reports from Early Warning System aerial surveys, or confirmed public sighting reports.

Vessel Size	Within the range of North Atlantic right whale	Within the SMA
33-65 ft	• All vessels must slow to 10 knots or slowest safe navigable speed • Slow speed maintained for 36 hours or until next North Atlantic right whale survey when no whales are observed, whichever is shorter.	• All vessels must slow to 10 knots or slowest safe navigable speed. • Slow speed maintained until the next North Atlantic right whale survey when no whales are observed (no time limit). • Vessels may resume speed once outside the SMA.
Over 65 ft	• All vessels must slow to 10 knots or slowest safe navigable speed. • Slow speed maintained for 36 hours or until next North Atlantic right whale survey when no whales are observed, whichever is shorter.	

b. Endangered Species Observers (Hopper Dredge Only)
During all hopper dredging operations, the Contractor must employ National Marine Fisheries Service (NMFS) approved Protected Species Observers (PSOs) to monitor for the presence of ESA-listed species. The dredge operator will maintain a safe working environment for the PSO to access and effectively monitor inflow screening, overflow screening, and dragheads for incidental take of ESA-listed species and associated bycatch after every load.

Upon completion of each load cycle, dragheads will be monitored as the draghead is lifted from the sea floor and placed on the saddle in order to assure that ESA-listed species that may be impinged within the draghead are observed and accounted for. The PSO, or designated dredge crew member under the guidance and supervision of the PSO when safety is of concern, must physically inspect dragheads for evidence of ESA-listed species take after every load.

All hopper dredges and relocation trawlers will have onboard dedicated daytime PSOs that meet the qualifications provided by NMFS and detailed in the South Atlantic Regional Biological Opinion for Dredging and Material Placement Activities (2020 SARBO) with at-sea, large whale identification experience to conduct observations for the presence of whales and all other ESA-listed species. The PSO will have the primary duty of observation when the vessel is underway. Observers will be onboard dredges and will alternate to reduce observer fatigue. As needed, a crew member on the bridge will assist the PSO with whale observation duty while the vessel is underway. The

PSO will provide crew members with appropriate training for large whale observation.

The contractor, before the start of dredging, will provide a single whale observer email address to receive aerial survey-related notifications (status, fly/no-fly plans, etc.) that will be immediately sent to all active vessels working in water for the project. The email address will be provided to nmfs.ser.rw.subscribe@noaa.gov and be confirmed annually, prior to each North Atlantic right whale calving season.

c. Manatee, Marine Turtle, Smalltooth Sawfish, and Whale Sighting Reports
Any collision with (or injury to) a marine turtle, manatee, or other ESA-listed species shall be reported immediately to the County. Additionally, the Contractor shall provide notification to the Florida Fish and Wildlife Conservation Commission (FWC) Hotline at 1-888-404-3922, and to FWC at ImperiledSpecies@myFWC.com. Any collision with (and/or injury to) a marine turtle shall also be reported immediately to the Sea Turtle Stranding and Salvage Network (STSSN) at SeaTurtleStranding@myfwc.com.

d. Hopper Dredge Equipment
A state-of-the-art solid-faced deflector that is attached to the draghead must be used on all hopper dredges at all times.

All hopper dredges are required to have 100% inflow screening unless they must be removed for safety due to clogging as outlined below.

Inflow screening size will start at 4-inch by 4-inch but may be gradually adjusted to a larger screen size if clogging reduces the ability for the PSO to monitor the inflow for the presence of ESA-listed species or if clogging reduces dredging production and thereby expands the time dredging is required.

Overflow screening is required to be installed and monitored after each load if the inflow screening is removed or bypassed due to clogging. Overflow screening must be designed to capture and retain material larger than the screen size for the PSO to monitor for the presence of ESA-listed species. The screened area must be accessible to the PSO to inspect for evidence of ESA-listed species take.

Overflow screen size will start at 4-inch by 4-inch but may be adjusted to a larger screen size if clogging reduces the ability for the PSO to monitor the

screen for the presence of ESA-listed species or if clogging reduces dredging production and thereby expands the time dredging is required.

e. Sea Turtle Relocation Trawl Sweeping
Relocation trawling and/or non-capture trawling is authorized in association with dredging activities in reasonable circumstances as an avoidance and minimization measure to reduce the risk of potential lethal take of ESA-listed species. If relocation trawling is deemed appropriate to minimize the risk of lethal take, trawlers will mobilize as quickly as possible.

Any activity involving the use of nets to harass and/or to capture and handle marine turtles in Florida waters requires a Marine Turtle Permit from FWC prior to trawling.

The following trawling specifications will be followed for relocation trawling. Trawl tow-time duration will not exceed 42 minutes (doors in - doors out). Trawl speeds will not exceed 3.5 knots for normal operations; however, speeds may be increased to the minimum speed needed to maintain control of the vessel. Lazy lines will be designed according to the design specifications in the Relocation Trawling Net Guidelines found in Appendix I of the 2020 SARBO to minimize the risk of entanglement with captured species.

f. Initiation of Turtle Trawling
These guidelines are included for information only. In general, there shall be a heightened awareness of the potential to take turtles under the following conditions:

i. Any time water temperature reaches or exceeds 55 degrees F (13 degrees C).
ii. Work is ongoing from the beginning of October through early December, and in March and April.
iii. Other Districts in the Corps of Engineers South Atlantic Division (CESAD) have taken turtles.
iv. Work has entered a rocky area or cleanup area where the deflector cannot rest properly on the bottom.
v. Upon written request from the County

g. Marine Turtle Beach Nest Monitoring
Construction-related activities are authorized to occur on the nesting beach (sandy beach seaward of existing coastal armoring structures or dune crest and all areas used for beach access) during marine turtle nesting season (**May**

1 through October 31). If the Contractor's construction activities occur after May 1, the Contractor is responsible for adhering to the following conditions:

i. Daily early morning marine turtle nest surveys shall start at the beginning of marine turtle nesting season (May 1). Daily nesting surveys shall continue through November 30, or until two weeks after the last crawl in the project area, whichever is earlier.
ii. Daily nesting surveys shall be conducted beginning ½ hour prior to sunrise, and no construction activity may commence outside the designated overnight work zone until completion of the marine turtle survey each day.
iii. The Contractor shall ensure that marine turtle nesting surveys are conducted as required in this authorization, and only conducted by personnel with a valid FWC Marine Turtle Permit, that covers all project activities as required by Chapter 68E-1, F.A.C. For information on the authorized Marine Turtle Permit Holders in the project area, contact FWC at MTP@myfwc.com.
iv. Only those nests laid in the area where sand placement will occur shall be relocated, and nest relocation shall cease after the sand placement is completed. Nests requiring relocation shall be moved no later than 9 a.m., the morning following deposition (no longer than 12 hours from the time the eggs are laid), to a nearby self-release beach site in a secure setting, where artificial lighting will not interfere with hatchling orientation. The relocation site shall be determined in conjunction with and approved by FWC prior to nest relocations. Relocated nests shall not be placed in organized groupings. Relocated nests shall be randomly staggered along the length and width of beach settings that are not expected to experience any of the following: inundation by high tides; severe erosion; previous egg loss; or illumination by artificial lighting.
v. Nests deposited within areas where construction activities will not occur for 65 days, or nests laid in the nourished berm prior to tilling, shall be marked and left in place. The Marine Turtle Permit Holder shall install on-beach markers at the nest site to establish a minimum 5-foot radius around the approximate clutch location and shall also install a secondary marker at a point as far landward as possible to assure that the nest can be located should the on-beach marker be lost. No activity shall occur within the marked area, nor shall any activities occur that could result in impacts to the nest. Nest sites shall be inspected daily to

assure nest markers remain in place and the nest has not been disturbed by the project activity.

h. Beach Placement Restrictions

Equipment lighting

During the marine turtle nesting season, the contractor shall not advance the beach fill more than 500 feet along the shoreline between dusk and the following day, until the daily nesting survey is completed, and the beach has been cleared for fill advancement. If the 500-foot advancement limitation is not feasible for the project, an alternative distance shall be established during the preconstruction meeting, if a distance can be agreed upon in consultation with FWC. If the work area is extended, nighttime nesting surveys are required, and a Marine Turtle Permit Holder is required to be present on-site to ensure that no nesting and hatching marine turtles are present. If any nesting turtles are sighted on the beach within the immediate construction area, activities shall cease immediately until the turtle has returned to the water and the Marine Turtle Permit Holder responsible for nest monitoring has relocated the nest.

i. Escarpment Surveys and Leveling

Visual surveys for escarpments along the project area shall be made immediately after completion of sand placement after March 15 and daily throughout the marine turtle season. Escarpments that interfere with marine turtle nesting or that exceed 18 inches in height for a distance of at least 100 feet over completed beach shall be leveled to the natural beach contour by means acceptable to the County. Any escarpment removal shall be reported relative to R- monument location along with coordinates of any marine turtle nests identified within 20 feet of the escarpment to the County.

j. Protection of Shorebirds

The term “shorebird” is used here to refer to all solitary nesting shorebirds and colonial nesting seabirds that nest on Florida’s beaches. These conditions are intended to avoid direct impacts associated with the construction of the project. The Contractor shall adhere to the shorebird protection conditions during the shorebird breeding cycle, which includes nesting.

i. Shorebird breeding season dates for this project area are **March 1 through September 1** (note that while most species have completed the breeding cycle by September 1, flightless young may be present through September and must be protected if present).
ii. Any parts of the project where “project activities” on the beach take place *entirely outside the breeding season*, do not require shorebird

surveys. The term “project activities” includes operation of vehicles on the beach, movement or storage of equipment on the beach, sand placement or sand removal, and other similar activities that may harm or disturb shorebirds. Bird survey routes must be established and monitored throughout the entire breeding season in any parts of the project area where: 1) potential shorebird breeding habitat occurs, and 2) project activities are expected to occur at any time within the breeding season. Breeding season surveys shall begin on the first day of the breeding season or 10 days prior to project commencement (including survey activities and other pre-construction presence on the beach), whichever is later.

iii. Bird surveys shall be conducted in all potential beach-nesting bird habitats within the project boundaries that may be impacted by construction or pre-construction activities. One or more shorebird survey routes shall be established by the Contractor to cover project areas which require shorebird surveys. These routes shall be determined in coordination with the FWC Regional Biologist (see website for contact information http://myfwc.com/conservation/you-conserve/wildlife/shorebirds/contacts) prior to the initiation of construction. Routes shall not be modified without prior notification to FWC.

iv. During the pre-construction and construction activities associated with the project, the Contractor shall ensure that surveys for detecting breeding activity and the presence of flightless chicks shall be completed **on a daily basis** by a qualified bird monitor. This shall be completed prior to movement of equipment, operation of vehicles, or other activities that could potentially disrupt breeding behavior or cause harm to the birds or their eggs or young. If breeding or nesting behavior is confirmed by the presence of a scrape, eggs or young, the Contractor (or their designee) shall establish a 300-foot buffer around the site and shall notify the FWC Regional Biologist within 24 hours. The posts and materials for the shorebird buffer zones shall be removed once all breeding or nesting behavior has ceased.

v. The Contractor shall require the Bird Monitor to conduct a shorebird education and identification program (and/or provide educational materials) with the on-site staff to ensure protection of precocial (mobile) chicks. All personnel are responsible for watching for shorebirds, nests, eggs and chicks. If the Bird Monitor finds that shorebirds are breeding within the project area, the Contractor shall place and maintain a bulletin board in the construction staging area with the location map of the construction site showing the bird breeding areas and a warning, clearly

visible, stating that "NESTING BIRDS ARE PROTECTED BY LAW INCLUDING THE FLORIDA ENDANGERED AND THREATENED SPECIES ACT AND THE STATE AND FEDERAL MIGRATORY BIRD ACTS".

k. Shorebird Monitor Requirements

i. The Contractor shall ensure that nesting and breeding shorebird surveys are conducted by trained, dedicated individuals (Bird Monitors) with proven shorebird identification skills and avian survey experience.

ii. Bird Monitor(s) shall be required to review and become familiar with the general information, employ the data collection protocol, and implement data entry procedures outlined on the FWC's Florida Shorebird Database (FSD) website (http://www.flshorebirddatabase.org or Florida Shorebird Database). They shall use the data-collection protocol and implement data entry procedures as outlined in that website.

iii. The Contractor shall submit a list of Bird Monitors, with their contact information and a summary of qualifications, including bird identification skills and avian survey experience to the County along with the Environmental Protection Plant, prior to any construction or shorebird surveys. The determination that the selected Bird Monitor(s) meet the required qualifications shall be coordinated between the County and the FWC Regional Biologist. The Bird Monitor(s) shall meet the following minimum qualifications:

a) Has previously participated in beach-nesting shorebird surveys in Florida (provide references or resume). Experience with previous projects must document the ability to 1) identify all species of beach-nesting birds by sight and sound, 2) identify breeding/territorial behaviors, and find nests of shorebirds that occur in the project area, and 3) identify habitats preferred by shorebirds nesting in the project area.

b) Have a clear working knowledge of, and adhere to, the *Breeding Bird Protocol for Florida's Seabirds and Shorebirds.* https://publictemp.myfwc.com/crossdoi/shorebirds/resources.aspx

c) Have completed full-length webinars: Route-Surveyor Training and Rooftop Monitoring Training, including the annual refresher training. Training resources can be found on the FSD website. https://publictemp.myfwc.com/crossdoi/shorebirds/index.aspx

d) Familiar with FWC beach driving guidelines. (https://myfwc.com/conservation/you-conserve/wildlife/beach-driving/).

e) Experience posting beach-nesting bird sites, consistent with *Florida Shorebird Alliance (FSA) Guidelines.* http://flshorebirdalliance.org/resources/instructions-manuals.aspx

f) Has registered as a contributor to the FSD

l. Shorebird Survey Protocols

Bird survey protocols, including downloadable field data sheets, are available on the FSD website. All breeding activity shall be reported to the County and the FSD website within one week of data collection. If the use of this website is not feasible for data collection, the FWC Regional Biologist shall be contacted for alternative methods of reporting. The Contractor shall ensure that the Bird Monitors use the following survey protocols:

i. Surveys shall be conducted by walking the length of all survey routes and visually surveying for the presence of shorebirds exhibiting breeding behavior, shorebird chicks or shorebird juveniles, as outlined in the FSD Breeding Bird Protocol for Shorebirds and Seabirds. Use of binoculars (minimum 8x40) is required and use of a spotting scope may be necessary to accurately survey the area. If an ATV or other vehicle is needed to cover large survey routes, the Bird Monitor shall stop at intervals of no greater than 600 feet to visually inspect for breeding activity.

ii. Once breeding or nesting behavior is confirmed by the presence of a scrape, eggs or young, the Permittee (or their designee) shall notify the FWC Regional Biologist within 24 hours.

m. Shorebird Buffer Zones and Travel Corridors

A 300-foot buffer shall be established around each nest or around the perimeter of each colonial nesting area. A 300-foot buffer shall also be placed around the perimeter of areas where shorebirds are observed digging nest scrapes or defending nest territories. All construction activities, movement of vehicles, stockpiling of equipment, and pedestrian traffic are prohibited in the buffer zone. Smaller, site-specific buffers may be established if approved in writing by the FWC Regional Biologist. Travel corridors shall be designated and marked outside the buffer areas for pedestrian, equipment or vehicular traffic.

The Bird Monitor(s) shall keep breeding sites under sufficient surveillance to determine if birds appear agitated or disturbed by construction or other activities in adjacent areas. If birds appear to be agitated or disturbed by these activities, then the Bird Monitor(s) shall immediately widen the buffer zone to a sufficient size to protect breeding birds.

The Bird Monitor(s) shall ensure that reasonable and traditional pedestrian access is not blocked in situations where breeding birds will tolerate pedestrian traffic. This is generally the case with lateral movement of beach-

goers walking parallel to the beach at or below the highest tide line. Pedestrian traffic may also be allowed when breeding was initiated within 300 feet of an established beach access pathway. The Bird Monitor(s) shall work with the FWC Regional Species Conservation Biologist to determine if pedestrian access can be accommodated without compromising nesting success. These site-specific buffers must be determined in coordination with the FWC Regional Biologist.

The Bird Monitor(s) shall ensure that the perimeters of designated buffer zones shall be marked according to FSA Posting Guidelines available at: http://flshorebirdalliance.org/resources/instructions-manuals.aspx) with posts, twine and FWC-approved signs stating "Do Not Enter, Important Nesting Area" or similar language around the perimeter (see example of signage for marking designated buffer zones at http://myfwc.com/conservation/you-conserve/wildlife/shorebirds/). Posts shall not exceed 3 feet in height once installed. Symbolic fencing (twine, string or rope) should be placed between all posts at least 2.5 feet above the ground and rendered clearly visible to pedestrians. If pedestrian pathway and/or equipment travel corridor modifications are approved by the FWC Regional Biologist, these shall be clearly marked. **Posting shall be maintained in good repair until no active nests, eggs, or flightless young are present.** Although solitary nesters may leave the buffer zone temporarily with their chicks, the posted area continues to provide a potential refuge for the family until breeding is complete. Breeding is not considered to be completed until all chicks have fledged.

The Contractor shall ensure that their construction activities, personnel, moving vehicles, or stockpiled equipment are not allowed within the buffer area.

The Bird Monitor(s) designate and mark travel corridors outside the buffer areas so as not to cause disturbance to breeding birds. Heavy equipment, other vehicles, or pedestrians may transit past breeding areas in these corridors. However, other activities such as stopping or turning heavy equipment and vehicles shall be prohibited within the designated travel corridors adjacent to the breeding site.

When flightless chicks are present within or adjacent to travel corridors, construction related vehicles shall not be driven through the corridor unless a Bird Monitor is present to adequately monitor the travel corridor. The contractor, with the oversight of the Bird Monitor(s), must avoid any chicks

that may be in the path of moving vehicles. The contractor will also be required, with the oversight of the Bird Monitor(s), to level any tracks, ruts, or holes that may be capable of trapping flightless chicks, while avoiding any impacts to the chicks.

Notification. Any injury or death of a shorebird (including crushing eggs or young) resulting from project activities shall be reported immediately to the FWC Regional Biologist.

3.2 POST CONSTRUCTION CLEANUP

All areas used during construction should be cleaned up to preconstruction conditions or better.

3.3 PRESERVATION AND RESTORATION OF LANDSCAPE AND MARINE VEGETATION DAMAGES

The Contractor shall restore all landscape features and marine vegetation damaged or destroyed during construction operations outside the limits of the approved work areas.

3.4 INVASIVE AND NUISANCE SPECIES

The Contractor shall thoroughly clean equipment prior to and following work on the project site to ensure that items/materials including, but not limited to, soil, vegetative debris, eggs, mollusk larvae, seeds, and vegetative propagates are not transported from a previous work location to this project site, nor transported from this project site to another location. Decontamination protocols require cleaning all equipment surfaces, including but not limited to, undercarriages, tires, and sheet metal. All equipment, including but not limited to, heavy equipment, vehicles, trailers, ATV's, and chippers shall be decontaminated. Smaller equipment, including, but not limited to, chainsaws, loppers, shovels, and backpack sprayers, shall be cleaned and inspected. The Contractor may utilize any method accepted by the Engineer; common accepted methods include pressure washing and steam cleaning/washing equipment. Decontamination protocols shall also address clothing and personal protective equipment.

END SECTION 01 57 20

SECTION 01 57 25

TURBIDITY AND DISPOSAL MONITORING

PART 1 GENERAL

1.1 SCOPE

Work covered by this section consists of furnishing all labor, materials, and equipment, and performing all work required for the turbidity monitoring described herein and FDEP Permit No. 0340616-003-JC. No separate payment will made for activities described under this section. All costs associated with turbidity monitoring shall be included in the unit cost item the Contractor deems most applicable.

1.2 SUBMITTALS

1.2.1 Pre-construction Submittals

a. Turbidity Monitor Qualifications
b. Draft Turbidity Sampling Map

1.2.2 Test Reports

a. Turbidity Monitoring Report – must be submitted within 24-hours after completion of the day's tests.

1.3 PERSONNEL QUALIFICATIONS

1.3.1 Turbidity Monitor – within 30 days of Award, not less than 45 days prior to the start of construction, the Contractor shall submit for approval by the County, the qualifications for the turbidity monitor. The monitor should be an independent third party with formal training in water quality monitoring and professional experience in turbidity monitoring for coastal construction projects.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 MONITORING REQUIREMENTS

3.1.1 General

a. Turbidity monitoring is required for beach fill activities only. No monitoring is required at the borrow site.
b. All monitoring is to be performed by an independent third-party, who is hired by the Contractor.
c. If monitoring reveals turbidity levels at the compliance sites are greater than **6 NTUs above the corresponding background turbidity levels when**

the plume extends into Outstanding Florida Waters (OFW), or 29 NTUs above the corresponding background turbidity levels outside the OFW, construction activities shall cease immediately and not resume until corrective measures have been taken and turbidity levels have resumed to acceptable levels.

d. The southern limit of the OFW is just south of R100 as indicated on the project plans.

3.1.2 Dredging and Disposal Locations

a. Background: Sampling shall occur at surface (approximately one foot below the water's surface), mid-depth (for sites with depths greater than 6 feet), and bottom (approximately 6 feet above the bottom for sites with depths greater than 25 feet). All background sampling shall occur clearly outside the influence of any artificially generated turbidity plume or the influence of an outgoing inlet plume.

At the beach site, samples shall be collected at least 500 meters up-current from any portion of the beach that has been, or is being, filled during the current construction event. The background sample is to be measured at the same distance offshore as the associated compliance samples.

b. Compliance: Sampling shall occur at surface (approximately one foot below the surface), mid-depth (for sites with depths greater than 6 feet), and bottom (approximately 6 feet above the bottom for sites with depths greater than 25 feet).

At the beach site, samples shall be collected where the densest portion of the turbidity plume crosses the edge of the mixing zone polygon, which measures up to 150 meters offshore and up to 1,000 meters alongshore from the point where the return water from the dredged discharge reenters the Atlantic Ocean.

Note that if the plume flows parallel to the shoreline, the densest portion of the plume may be close to shore, in shallow water. In that case, it may be necessary to access the sampling location from the shore, in water that is too shallow for a boat.

c. Intermediate Monitoring (required when using a mixing zone that exceeds 150 meters in size): Sampling shall occur at surface (approximately one foot below the surface), mid-depth (for sites with depths greater than 6 feet), and bottom (approximately 6 feet above the bottom for sites with depths

greater than 25 feet), at points approximately 150, 500, and 750 meters down current from the point where the return water from the dredged discharge reenters the Atlantic Ocean (if those points are located inside the mixing zone), within the densest portion of any visible turbidity plume generated by this project. These measurements will be used to calibrate the size of the mixing zone for future events.

3.1.3 Unanticipated Discharge

Any project-associated turbidity source other than dredging or fill placement for beach nourishment (e.g., scow or pipeline leakage) shall be monitored as close to the source as possible. If the turbidity level exceeds 29 NTUs above background outside of the OFW, or 6 NTUs above background within the OFW, the construction activities related to the exceedance shall **cease immediately** and not resume until corrective measures have been taken and turbidity has returned to acceptable levels. This turbidity monitoring shall continue every hour until background turbidity levels are restored or until otherwise directed by the County. The Contractor shall notify the County, by separate email, of such an event immediately after the Contractor first becomes aware of the discharge.

3.2 TURBIDITY TESTS

3.2.1 Testing

a. Frequency: Monitoring for beachfill utilizing a hopper dredge must be conducted for each hopper dredge load delivered to the beach during daylight hours. Sampling shall be conducted after discharge begins and the associated turbidity plume has reached the edge of the mixing zone.

Sampling shall be conducted while the highest project-related turbidity levels are crossing the edge of the mixing zone. The compliance samples and the corresponding background samples shall be collected at approximately the same time, i.e., background sample shall immediately follow the compliance sample.

b. Calibration: The instruments used to measure turbidity shall be fully calibrated with primary standards within one month of the commencement of the project, and at least once a month throughout the project. Calibration with secondary standards shall be verified each morning prior to use, after each time the instrument is turned on, and after field sampling using two secondary turbidity “standards” that bracket the anticipated turbidity samples. If the post-sampling calibration value deviates more than 8% from the previous calibration value, results shall be

reported as estimated and a description of the problem shall be included in the field notes.

3.2.2 Reporting

a. Daily Turbidity Monitoring Report Contents

i. Permit number (0340616-003-JC)

ii. A statement describing the methods used in collection, handling, storage, and quality control methods used in the analysis of the samples.

iii. Data presented in tabular format indicating the measured turbidity levels at the compliance sites for each depth, the corresponding background levels at each depth and the number of NTUs over background at each depth. Any exceedances of the turbidity standard (29 NTUs above background outside of the OFW or 6 NTUs above background within the OFW) shall be highlighted in the table.

iv. A map indicating the sampling location and plume configuration, if any.

v. A map plotting the dredge location. This map can be combined with the map indicating the sampling location.

vi. A statement by the individual responsible for implementation of the sampling program concerning the authenticity, precision, limits of detection, and accuracy of the data.

vii. Monitoring Reports. Monitoring reports shall also include the following information for each day that samples are taken:
(1) Time of day and date samples were taken.
(2) Depth of water body.
(3) Depth of sample.
(4) Antecedent weather conditions.
(5) Tidal stage and direction of flow.
(7) Water temperature, C degrees (heavy metal and ammonia analysis only).
(8) Pumpout location (station location and map).
(9) Water sample location.
(10) Wind direction and velocity.

viii. A description of any factors influencing the dredging or disposal operation or the sampling program. Reports shall be furnished daily even when no sampling is conducted. When sampling is not conducted, a brief statement shall be given in the report explaining the reason for not conducting the sampling, such as "dredge not working due to mechanical problems" or "no sampling taken due to high seas".

ix. GPS coordinates (x and y) shall be provided for all sampling stations along with the coordinates of the dredge and discharge pipe and the distance between the sampling station and dredge/discharge pipe for each sampling event to demonstrate compliance with the stated sampling distances. When possible, coordinates should be provided in decimal degrees with a 5 decimal level of precision (i.e., 0.000001).

x. A geo-referenced map, overlaid on an aerial photograph, indicating the sampling locations (background and compliance), location of active construction, the visible plume pattern and direction of flow. A sample map shall be submitted to and reviewed by the County prior to construction.

b. Notification

If turbidity exceeds background levels by more than the amount described in paragraph 3.1.1 of this section, the Contractor shall immediately notify the County in writing (email acceptable). The following information shall be included when reporting a turbidity exceedance:

i. Project Name (South Ponte Vedra Beach Dune Restoration Project);
ii. Permit Number (0340616-003-JC)
iii. Location and level (NTUs above background) of the turbidity exceedance
iv. The time and date that the exceedance occurred; and
v. The time and date that construction activities ceased.

Prior to re-commencing the construction, a report shall be emailed to the County and FDEP with the same information that was included in the Exceedance Report, plus the following information:

vi. Turbidity monitoring data collected during the shutdown documenting the decline in turbidity levels and achievement of acceptable levels;
vii. Corrective measures that were taken; and
viii. Cause of the exceedance.

3.3 WORK DELAY

Any delays in work as a result of turbidity standard exceedances will not be grounds for an adjustment to contract price or schedule. The Contractor is responsible for maintaining compliance with this specification and should adjust their cost and proposed schedule accordingly.

END 01 57 25

SECTION 02 22 13

VIBRATION MONITORING REQUIREMENTS FOR EXISTING STRUCTURES

PART 1 GENERAL

1.1 SUBMITTALS

1.1.1 Preconstruction Submittals

a. Vibration Control Specialist
b. Vibration Control Specialist Alternate
c. Vibration Monitoring Technician
d. Structural Inspection/Evaluation Engineer
e. Preconstruction Structural Survey
f. Vibration Control Plan

1.1.2 Test Reports

a. Vibration Monitoring Report
b. Daily Instrument Logs
c. Post-Construction Structural Survey

1.2 PERSONNEL QUALIFICATIONS

1.2.1 Vibration Control Specialist – within 30 days of Notice to Proceed, the Contractor shall submit for approval by the County, qualifications for a Vibration Control Specialist and an alternate. The Vibration Control Specialist and their alternate should have a background in structural and/or geotechnical engineering with a minimum of three years of experience in vibration monitoring. The Vibration Control Specialist shall be on site during mobilization and demobilization of construction equipment and during all beach fill operations that affect vibration sensitive structures as outlined in paragraph 3.2 PRE-CONSTRUCTION STRUCTURAL SURVEY of this section.

1.2.2 Vibration Monitoring Technician – within 30 days of Notice to Proceed, the Contractor shall submit for approval by the County, qualifications for the Vibration Monitoring Technician. The Vibration Monitoring Technician is responsible for operation, maintenance, and calibration of seismographs. Each technician should have a minimum of three years of experience in vibration monitoring.

1.2.3 Structural Inspection/Evaluation Engineer – within 30 days of Notice to Proceed, the Contractor shall submit for approval by the County, qualifications for the Structural Inspection/Evaluation Engineer. Structural inspections shall be performed by professional structural engineers registered in the State of Florida with a minimum of three years of demonstrated experience in

structural condition inspections. The Structural Inspection Engineer shall have responsibility for pre-construction and post-construction structural surveys.

1.3 VIBRATION CONTROL PLAN

1.3.1 Prior to mobilization of equipment, the Contractor shall submit for approval by the County, a Vibration Control Plan. The plan should include at a minimum:

a. List of structures that are susceptible to vibration damage.
b. Number of monitors (seismographs) required for the project and location of monitors that will operate simultaneously in each work area.
c. Calibration data for each seismograph that will be used for the project. Calibrations shall be current, not older than one year, and follow the manufacturer's recommended procedures.
d. List of methods and procedures to reduce ground vibrations induced by construction activities to below the pre-determined maximum allowable vibration level for the designated vibration sensitive structure(s); i.e., reducing equipment speed, changing fill placement method, reducing equipment size, and using manual labor.
e. Plan for each work area showing the proposed construction equipment in the area, the description of susceptible structure(s) in the work area, monitors in the work area, and the list of methods and procedures in subparagraph d. above.
f. The minimum safe working distance that vibration producing equipment may operate from each vibration sensitive structure(s).
g. The maximum allowable ground vibration level that is permissible without causing threshold damage to each vibration sensitive structure(s).
h. Frequency of instrument maintenance/inspection by the Vibration Control Specialist. Frequency shall not be greater than every 48 hours.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 VIBRATION CONTROL PROGRAM

The Contractor should implement a program that protects existing structures from damages that result from construction equipment operations and vibrations. The purpose of the program is to avoid damages and potential claims that allege damages were caused by construction activities. The Contractor is responsible to document pre-existing conditions, to avoid damaging existing structures that were determined to be susceptible to vibration damage, and to avoid damaging existing structures that were not determined to be susceptible to vibration damage;

related responsibilities include inspection, damage claims, and work stoppage that results from monitoring.

The Contractor shall process any claim arising from his operation; in particular, all property damage claims shall be acknowledged by the Contractor (or his agent) immediately, and the claimed damage inspected within 30 calendar days following initial notification, and processed to a conclusion (honored, denied, or compromised) within 90 calendar days after completion of the contract; but, in no case shall the claim(s) remain unresolved for a period exceeding six months.

3.2 PRE-CONSTRUCTION STRUCTURAL SURVEY

Inspect existing structures within 200 feet from the beach fill limit as to their potential susceptibility to vibration damage from construction equipment induced ground vibration. Visible structural and/or cosmetic damage to buildings, exterior walls, foundations, decks, pools, bulkheads and seawalls shall be documented by photographs, sketches, and field notes.

Factors to consider in determining potential susceptibility shall include but not be limited to: foundation design; foundation conditions; soils testing data; changes in structural loads and local water levels due to beach fill placement; structural condition including construction materials; past damage history and existing stresses, magnitude, frequency, and duration of predicted vibrations from construction equipment and distance from fill placement.

Inspect all existing structures that are determined to be vibration sensitive. Any damage found shall be documented thoroughly by photographs (supplemented with video as necessary), sketches of visible structural and/or cosmetic damage, and field notes. Photographs shall be at least 3- by 5-inch (or digital) and shall provide a detailed visual explanation of the damage. Include a reference scale in each close-up photograph. Sketches shall show the general damage location and extent. All inspection items shall be indexed and cross-referenced and shall use the stationing and locations shown on the contract drawings. Include hotel/motel names and addresses where applicable. Structural damage shall be additionally documented by measuring crack or damage size, width, and length. Every effort shall be made to inspect and document the condition of the building's interior where the building has been determined to be extremely susceptible to vibration damage. Structure(s) determined not to be susceptible to vibration damage shall be noted as such.

3.3 VIBRATION CONTROL PLAN

Use the results of the Pre-Construction Structural Survey to develop the Vibration Control Plan. The Plan shall include procedures to monitor vibration sensitive structures, adjust daily mobilization and demobilization activities, and alter fill placement operations. The Plan shall include the appropriate tolerable ground vibration level for each structure that has been determined to be susceptible to vibration damage. Should ground vibrations equal or exceed the pre-determined maximum vibration level(s), construction operations shall be halted and corrective measures taken in accordance with the approved Plan.

The minimum safe working distance that vibration producing equipment may operate from each vibration sensitive structure shall be documented in the Plan.

The maximum allowable ground vibration level that is permissible without causing threshold damage to each vibration sensitive structure shall be documented in the Plan. Threshold damage is defined as the occurrence of cosmetic damage.

Each seismograph shall have the capability to measure peak particle velocity and frequency and shall be equipped with an alarm system to alert the Vibration Control Specialist that ground vibrations are approaching the maximum tolerable ground vibration level. Seismographs shall record measurements 24 hours a day, 7 days a week. Seismographs shall be installed and shall be properly working prior any construction activities, including mobilization and demobilization of all construction equipment, and fill placement operations.

The Contractor's personnel responsible for implementation of the Plan is hereinafter called Vibration Control Specialist. The Vibration Control Specialist shall be on site at the active fill location during all fill placement operations that can affect vulnerable structures. However, seismographs used for the 24/7 monitoring shall be capable of 24-hour real time notifications capable of being sent directly to the Vibration Control Specialist and Vibration Control Technicians. Ground vibrations shall be kept in allowable levels to avoid damaging existing structures that were determined to be susceptible to vibration damage, and to avoid damaging existing structures that were not determined to be susceptible to vibration damage. Additionally, the Vibration Control Specialist will provide support to the Contractor to best mitigate against direct impacts to structures or indirect impacts to structures due to uncontrolled loading.

3.4 DAILY INSTRUMENT LOG

The Contractor shall submit the daily instrument log at the conclusion of each week. Although the Vibration Control Specialist may choose not to be on site when construction activities do not involve vibration sensitive structures, seismographs

used for the 24/7 monitoring shall be capable of 24-hour real time notifications capable of being sent directly to the Vibration Control Specialist and Vibration Control Technicians. Ground vibrations shall be kept in allowable levels to avoid damaging existing structures that were determined to be susceptible to vibration damage, and to avoid damaging existing structures that were not determined to be susceptible to vibration damage.

3.5 VIBRATION MONITORING REPORT

The Contractor shall submit the Vibration Monitoring Report each week. The monitoring report shall detail the daily activities of the vibration monitoring program. This report shall include, but not be limited to, locations of monitoring equipment; instrument serial number; date and times of readings; magnitude of vibration levels; a sketch and photograph of each monitoring station showing the relationship of the monitor to vibration sensitive structures; daily instrument logs; instructions transmitted to the Contractor's personnel regarding the modification or stoppage of work operations to keep vibrations below the allowable levels; description of complaint(s); and, any other information pertinent to the vibration monitoring program.

3.6 POST-CONSTRUCTION STRUCTURAL SURVEY

Immediately after completion of work, the approved structural inspector/evaluation engineer shall conduct a post-construction inspection of the structures previously inspected under the Pre-Construction Structural Survey. Documentation procedures shall be identical to those performed under the Pre-Construction Structural Survey. Changes or deviations from the pre-construction inspection conditions in any structure shall be identified and described in the inspection documentation. All citizen complaints and remedies that occurred during the placement of beach fill shall be summarized and included in the report.

END SECTION 02 22 13

SECTION 02 83 20

DUNE PROTECTION

PART 1 GENERAL

1.1 SUBMITTALS

1.1.1 Product Data

a. Description of details of materials

1.1.2 Certificates

a. Certificate of Compliance - Statement signed by an official authorized to certify on behalf to the wood preserving plant attesting that the material meets each of the specified requirements for pressure treated wood. The statement shall be dated after award of the contract and shall state the Contractor's name and address and shall include the project name and location.

1.2 SUMMARY

The contractor will be required to furnish all material, equipment, and labor to install post and rope and dune signs.

PART 2 PRODUCTS

2.1 POSTS

Prior to installation the Contractor will be required to submit manufacturer’s written description of materials to be furnished.

Posts shall be round wooden posts, not less than 3 inches in diameter at the smallest point, of any of the types specified below. Wooden fence posts shall be sound and free from decay, excessive knots, and clusters of knots, and splits that exceed 1.5 times the diameter or width of the post. Seasoning checks not affecting serviceability will be permitted. All posts shall be reasonably straight. The following types of wood shall be acceptable:

a. Eastern red cedar
b. Western red cedar
c. Northern white cedar
d. Other woods species having natural resistance to wood destroying organisms, and strength greater than or equal to the species specified above, as approved by the County
e. Southern Pine. In lieu of naturally resistant wood species, posts shall be Southern Pine, pressure-treated with non-CCA wood preservatives in accordance with American Wood Protection Association (AWPA) standards

AWPA U1, Use Category 4B(UC4B). Inspection at the wood preserving plant shall be in accordance with AWPA M2.

2.2 ROPE

Rope should be 100 percent natural hemp between 0.25 and 0.5 inches in thickness.

2.3 DUNE SIGNS AND INFORMATION SIGNS

The final design file will be provided to the Contractor in digital format which shall be used to manufacture the signs. The sign and components shall be aluminum and shall meet current FDOT design, materials, and construction standards for "Single Column Ground Signs". Sign shall be non-reflective, have a non-gloss finish, resistant to fading, and have rounded edges.

PART 3 EXECUTION

3.1 POST

Posts shall be set plumb, accurately spaced, lined, and placed to a uniform height before rope, dune sign or information sign is attached. All posts shall be set to the minimum depth shown on the drawings. At the option of the Contractor, posts may be driven into place, provided that the method of driving does not damage the post. Holes for posts set by hand shall be backfilled and thoroughly compacted in layers not exceeding 6 inches in depth, and in such manner that the post will be securely held in place. Any damage to existing or newly placed vegetation shall be replaced by at the Contractor's expense. Posts shall be set and allowed to stabilize for a minimum of 7 calendar days before attaching signs or ropes.

3.2 POST AND ROPE

Rope shall not sag greater than 18 inches between adjacent posts. Rope shall be continuous (non-spliced) between posts and shall terminate after each consecutive post. Individual ropes shall span between no more than two consecutive posts. A "stopper knot" or similar knot shall be tied in the rope on either side of each post.

3.2.2 Post and Rope Locations and Extents

1. Northern Project Walkover – approximate station 7+700
   Northern extent: 60 feet – Station 7+640 to 7+700
   Southern extent: 240 feet with 50-foot gap for vehicle access at approximate station 7+850
2. South Ponte Vedra Beach Recreation Area – approximate station 19+600

Northern extent: 180 feet
Southern extent: 220 feet with 40-foot gap for vehicle access at approximate station 19+740

See Table 2 below. Additionally, at each location, on either side of the pedestrian or vehicle access, the Contractor shall install post and rope perpendicular to the Construction Baseline, across the constructed dune, to deter the public from traversing over the planted dune.

Table 2 – Post and Rope Extents

Approx. Start Station	Approx. Stop Station	Length of Post and Rope (ft)
7+640	7+700	60
7+710	7+830	120
7+880	7+940	60
19+420	19+600	180
19+610	19+720	110
19+760	19+820	60

3.3 DUNE SIGNS

Dune signs should be placed on the posts used for post and rope fencing. Signs shall be installed as shown on the project plans with one sign spaced every 60 feet of fencing and at least one sign at each walkover and vehicle access.

3.4 INFORMATION SIGNS

The information signs should be installed as shown on the project plans. Signs should be located near the entrance of each walkover and vehicle access, in a conspicuous place, facing landward. The exact location of installation shall be coordinated with the County.

END SECTION 02 83 20

SECTION 32 92 19

DUNE VEGETATION PLANTING

PART 1 GENERAL

1.1 SCOPE OF WORK

This section consists of furnishing labor, plants, equipment, and material necessary for planting of dune vegetation over the entire length of constructed dune and as described herein. The Contractor is responsible for providing, installing, and warranting survival of dune vegetation planted along the constructed dune.

The cost for the described work should be included in the unit price line item for Dune Planting. Costs for dune planting associated with the restoration of the project site to pre-construction conditions should be accounted for in the line item for Mobilization and Demobilization.

1.2 SCHEDULES

Installation of all dune plants shall be completed within 60 days of completion of final grading and tilling of the constructed beach or by July 30, whichever is earlier.

1.3 SUBMITTALS

1.3.1 Preconstruction

a. Dune Vegetation Planting Plan

1.3.2 Shop Drawings

a. Irrigation Plan

1.3.3 Product Data

a. Dune Vegetation

1.3.4 Test Reports

a. Progress Reports

1.3.5 Certificates

a. Certificate of Compliance

1.3.6 Closeout Submittals

a. Dune Vegetation Report – Installation

b. Dune Vegetation Warranty Report

1.4 WORK RESTRICTIONS

1.4.1 Marine Turtle Nesting Season

a. Marine turtle nesting season is May 1 through October 31. If dune planting occurs during marine turtle nesting season the Contractor shall enlist a marine turtle surveyor to perform surveys of the project area and beach access sites for signs of nesting marine turtles prior to work each day. Nesting

surveys shall occur each day starting May 1 or 65 days prior to installation of plants (whichever is later) and continue until all dune plants have been installed and equipment removed from the beach.

b. Surveys should be conducted throughout the project area and all beach access sites.

c. Dune planting activities shall not occur during marine turtle nesting season until after the turtle survey has been completed in the work area each morning.

d. Any nests deposited in the area shall be left in place. The marine turtle permit holder will install an on-beach marker at any nest site and a secondary marker located at a point as far landward as possible to ensure that future location of the nest will be possible should the on-beach marker be lost. A series of stakes and survey ribbon or string will be installed to establish an area of 3 feet radius surrounding the nest. No planting or other activity shall occur within this area nor shall any activity occur which might cause indirect impacts within this area. Nest sites will be inspected daily to ensure nest markers have not been removed.

e. During marine turtle nesting season, the use of heavy equipment (including vehicles such as trucks) is not authorized in marine turtle nesting habitat. A lightweight (ATV style) vehicle, with tire pressures of 10 p.s.i. or less can operate on the beach if required.

f. During marine turtle nesting season any vegetation planting shall be installed by hand labor/tools only.

1.5 DEFINITIONS

1.5.1 Planting Unit – For the purpose of this contract, the term “planting unit” refers to at least 2 stems of an individual, viable, nursery grown plant. No other plant species than outlined in the project plans will be accepted as substitute.

PART 2 PRODUCTS

2.1 PLANT SPECIES

2.1.1 Acceptable plant species and diversity requirements are as follows:

a. Between 80 and 85 percent of the installed plant units shall be Sea oats (*Uniola paniculata*)

b. Between 10 and 15 percent of the installed plant units shall be Bitter panicgrass (*Panicum amarum*)

c. Between 3 and 7 percent of the installed plant units shall be a relatively equal abundance of Railroad vine (Ipomoea pes-caprae) and Dune sunflower (helianthus debilis; not vestitus)

2.1.2 Source of Plant Material

All plant materials shall be derived from Florida East Coast sources. The contractor must provide written documentation as to the source of the planting units to be delivered under this contract. At a minimum, documentation shall include seed collection permits, and contracts from the Florida Department of Environmental Protection, the U.S. Department of Agriculture, or other comparable documents.

The County may elect to perform genetic or other testing to verify the source of the planting units to be delivered and installed under this contract. If judged to be appropriate by the County, this testing will be performed at the nursery providing plants and/or at the locations that plants are being installed. If the results of this testing indicate that the source of plant material is not acceptable to the County, all planting work under this contract will be terminated. In this event, costs for plants not successfully installed and viable at the time of contract termination will not be eligible for payment. Uninstalled plants, whether at the work site, storage area, Contractor nursery or other area, will not be eligible for payment. All unacceptable plants shall be removed from the project site at the Contractor's expense.

All plant materials are to be propagated, prepared, handled, packed, stored, and installed in accordance with the specifications provided in the following sections. Any plant materials not meeting these specifications will be rejected at the discretion of the County.

2.2 LINERS AND POTTED PLANT GERMINATION

2.2.1 Liners

All plant materials shall be grown in multi-well trays (liners) approximately 1.5" wide by 1.5" long and not less than 2.5" in depth.

2.2.2 Number of Seeds per Liner

The number of seeds placed in each liner will be determined through germinations experiments by the contractors such that deliverable, viable planting units with at least 2 emergent stems per liner are produced. Planting units with fewer than 2 stems will be rejected. Prior to shipping, roots should fill the entire volume of the liner, but should not be root bound.

2.2.3 Micropropagation

Planting units grown from approved sources via micropropagation techniques may be accepted under this contract. Plants produced from cuttings or the division of larger plants may be used if the material is derived from Florida East Coast sources and meets all of the specifications for seed-produced planting units. However, planting units derived from micropropagation techniques shall

not exceed 25% of the total number of planting units delivered under this contract.

2.3 PLANT SIZE, AGE, AND CONDITION

2.3.1 Plant Size

Planting units shall be no less than 8”, and no more than 16”, in height (length for railroad vine), as measured from the root ball to the apical meristem. Planting units shall not be physically altered (cut, trimmed, etc.) to meet this specification.

2.3.2 Plant Age

Deliverable planting units shall be no less than 90 days old and no more than 150 days old, as measured from the approximate time of germination to the date of installation.

2.3.3 Number of Planting Units Delivered

Planting units shall be delivered to the work sites in consistent, accessible, and uniform containers such as waxed boxes. Each container delivered to a work site will be subject to inspection and counting by the County. A standard number of within-specification planting units (e.g., 500 planting units per container) for each container will be established before the delivery of planting units to a work site will be accepted by the County. If more than one container is found to contain less than the established standard planting unit count, all containers of plants delivered to a work site will be rejected. Boxes of planting units found to contain more than the number of planting units will be considered to contain only the standard number of planting units per box (e.g., 500 planting units per container).

2.3.4 Plant Condition

All planting units provided under this contract shall have moist, vigorous root systems free of rot, disease, or discoloration at the time of delivery and installation.

PART 3 EXECUTION

3.1 DUNE VEGETATION PLANTING PLAN

Prior to commencement of work, the Contractor shall prepare and submit, for approval by the County, a planting plan describing the following:

a. Origin of plant seeds and/or plant resources, specific to each species of plants, including permits for collection;
b. Nursery Locations, address, and contact information;
c. Planting (Installation) Plan, including number and Species of planting units, method of work, tools, and installation methods, types of equipment and vehicles to be used for installation, proposed access and staging areas;

d. Irrigation source, method, schedule;
e. Fertilizer - brand name, type, amounts;

3.2 LAYOUT OF THE WORK

The approximate limits of the planting zone are shown on the project drawings. Field adjustment in both numbers and location of the plants to be installed may be necessary by the County depending on site and weather conditions encountered at the start and during installation. Planting units shall be installed on the dune crest and the entire seaward dune slope. In areas where the landward side of the dune slopes down to structures or existing grade, this area should also be planted.

The Contractor should leave an access path, approximately 8-feet wide, to each private residence or empty lot unplanted. Prior to installing plants, the Contractor shall identify the limits of dune planting and access paths. Similarly, the Contractor shall leave an access path at each public beach access. Locations and limits of planting will be field-determined and agreed upon by the Contractor and County prior to installation of the plants along any given length of the work, in order to ensure common understanding and agreement of the areas for planting (and non-planting) before the plants are installed.

At construction staging and access areas, existing dune plants removed or damaged by the Contractor shall be replaced by installation of dune plants as described herein.

3.3 DUNE VEGETATION: PLANT UNIT HANDLING AND INSTALLATION

3.3.1 Preparation, Handling and Storage

The root ball shall be properly moistened to prevent desiccation. All planting units shall be handled, packed, transported and stored at the installation site in such a manner as to ensure protection against desiccation, thermal stress, disease or physical damage.

3.3.2 Planting Unit Depth

All planting units shall be installed at a minimum depth of 6”, as measured from the top of the root ball to the sand surface.

3.3.3 Planting Unit Spacing

The spacing in all designated planting zones is indicated on the project plans, with every other row parallel to the shoreline staggered. Plants installed more densely than required will not be eligible for payment.

3.3.4 Irrigation

a. Initial Irrigation – For all plants the Contractor will include a water gel material such as Terrasorb, Stockosorb, or approved equal with each newly installed planting unit to assist with meeting the required plant survival

criteria. The type, amount, and method for applying this material are to be described in detail by the Contractor in its Dune Vegetation Planting Plan. The cost of this material shall be included in the proposed unit prices for installation.

3.3.5 Fertilization

a. The Contractor shall include a slow-release fertilizer such as Osmacote Plus 15-9-12 Southern, Stock #90330, 12–14 month slow-release fertilizer, or approved equal, with each newly installed planting unit to assist with meeting the required plant survival criteria. The type, amount, and method for applying this material are to be described in detail by the Contractor in its proposal for this contract. The cost of this material shall be included in the proposed unit prices for installed plants.

b. Maintenance fertilization is not permitted under this contract.

3.3.6 Inspections

The Contractor shall provide the County with open access to all nursery operations, storage areas, staging areas and other work sites, in the manner and time frame requested by the County for the purpose of performing compliance inspections and any testing work deemed necessary by the County.

3.4 DUNE VEGETATION: WARRANTY, SUCCESS CRITERIA, AND REPLANTING

3.4.1 Initial Planting Unit Survival.

Planting units that do not survive for a minimum of 10 days after installation will be rejected and not be considered eligible for payment. New, within-specification, planting units will be installed by the Contractor in the areas that do not survive for a minimum of 10 days. Contractor will be responsible for installing the new replacement planting units within 5 days of notification by the County that an area of initial planting units did not survive for 10 days. The replacement planting units will be considered eligible for payment as “original” planting units only after they have survived a minimum of 10 days from installation. The success criteria for the initial 10-day survival period shall be the criteria described in subpart 3.4.2.a and subpart 3.4.2.b.

3.4.2 Planting Unit Success Criteria.

The success of the planting effort will be assessed by the County approximately 180-days from the end of the planting unit installation using three measures: whole-site survival rate, planting unit survival pattern, and planting unit root penetration. The planting effort shall be deemed a success if, in the sole judgement of the County, all three of the described criteria are met at the 80% level.

a. Whole-Site Survival Rate.

A minimum survival rate of 80% of all planting units installed over the site, as a whole, shall be achieved. Plants will be considered to be surviving if they

show clearly vigorous rhizomes and white, turgid roots, even in the absence of vital above ground growth.

b. Survival Pattern.
A minimum of 80% of the planting zone width perpendicular to the shoreline shall be occupied by surviving planting units at all locations.

c. Planting Unit Root Penetration.
A minimum of 13 out of 16 (80%) randomly selected plants in each planting zone shall have achieved root penetration of 9" or greater, as measured from the top of the root ball down. The Contractor and the County immediately following plant installation shall tag the 16 randomly selected plants in the field. This success criterion may be waived, at the sole discretion of the County, if lesser root penetration is otherwise determined to be acceptable, or if it was caused by factors outside the control of the Contractor (i.e., excessive natural rainfall). A planting zone is defined as the length of beach between each R-Mon and shall be depicted in the Contractor's Dune Vegetation Planting Plan.

3.4.3 Replanting of Planting Units.
If any of the above success criteria are not met, as determined by the County, the Contractor shall replant with viable, and within specification, planting units in all areas considered to be deficient according to the planting unit success criteria. The replanting of planting units will be the sole responsibility of the Contractor and be completed at no cost to the County. All warranty and survival provisions and requirements will apply to replanted planting units.

3.5 MARINE TURTLE NEST AND SHOREBIRD AVOIDANCE

a. In the event a nest is disturbed or uncovered during planting activity, the Contractor shall cease all work and immediately contact the marine turtle permit holder responsible for marine turtle conservation measures within the project area. If a nest(s) cannot be safely avoided during construction, all activity within the affected project area shall be delayed until complete hatching and emergence of the nest.

b. All planting related activities must avoid marked marine turtle nests including those that may be on the beach before and after the marine turtle nesting season dates (May 1 through October 31). Any impacts to nests or marine turtles that inadvertently occur shall be immediately reported to the County and FWC at MarineTurtle@myfwc.com, and all work shall stop until authorized to continue by the County and FWC.

3.6 REPORTS

3.6.1 The Contractor shall note in their daily QC Report, outlined in Section 01 45 05 CONTRACTOR QUALITY CONTROL, a summary of activities completed on that date and completed to-date regarding dune vegetation activities.

3.6.2 Dune Vegetation Report – Installation
Submit a summary report describing the number of each species planted for the work, relevant dates of installation and initial replacements, and other pertinent summary description of the work within 30 days after completion of initial installation and initial replacement (if any).

3.6.3 Dune Vegetation Warranty Report
Submit a summary report describing the dates, scope, and results of inspections for warranty, including description of requirements and/or completed replacement of plant units, within 30 days after completion of the warranty period.

END SECTION 32 92 19

SECTION 35 20 25

BEACH FILL

PART 1 GENERAL

1.1 SUMMARY

The project work covered by this section consists of furnishing all plant, labor, equipment, supplies, and material, and of performing all operations in connection with excavating, transporting, and placing beach fill along the project shoreline as indicated on the drawings, as described by applicable permits, and/or as specified herein. Related sections are 01 11 00 SUMMARY OF WORK, 01 57 20 ENVIRONMENTAL PROTECTION, 01 57 25 TURBIDITY AND DISPOSAL MONITORING, and 02 22 13 VIBRATION MONITORING REQUIREMENTS FOR EXISTING STRUCTURES.

1.2 SUBMITTALS

1.2.1 Preconstruction

a. Dredging and Beach Fill Plan

b. Construction and Grade Stake Recovery Plan

1.2.2 Shop Drawings

a. Progress Maps – submitted each day with Contractor's Daily QC Report
The progress map shall be a plan view drawing depicting the beach fill area. For the beach fill area, the information shall list the following: Anticipated quantity of material placed to date, dates of accepted sections, anticipated dates of completion, shore pipe configuration. The map will be color coordinated with a different color to depict the following: area not affected by fill, area currently being worked, and area accepted by the County.

b. Dredge Tracking Plot

1.3 PROJECT SCOPE

1.3.2 Project Order of Work: At the Preconstruction Conference, the Contractor shall propose the order in which the work will be performed, including the anticipated progression of excavation of the borrow area(s) and fill placement. Within the fill placement site, the Contractor can begin their filling operations at any point along the project beach, but the Contractor must maintain a continuous filling operation without any intervening gaps. Working multiple dredges on multiple sublines simultaneously is permissible.

1.3.3 Project Work Permits and Responsibilities
Permits and authorizations secured by the County are described in Section 01 57 20 ENVIRONMENTAL PROTECTION. Any additional permits that the

Contractor deems necessary for construction activities are the responsibility of the Contractor.

1.3.4 Project Traffic and Navigation

The Contractor is responsible for understanding and adhering to the laws and regulations established by the US Coast Guard, Florida Department of Environmental Protection, Florida Department of Transportation, and State and local law enforcement. The Contractor is not permitted to interfere with vehicle or vessel traffic without approval by the County.

1.3.5 Protection of Existing Structures from Construction Activity

The Contractor shall be responsible for determining and documenting the pre-construction condition of existing structures within the project area. The Contractor shall take appropriate measures to prevent damage to any structures during construction, and for performing a post-construction verification inspection of those structures previously inspected. Refer to Section 02 22 13 VIBRATION MONITORING REQUIREMENTS FOR EXISTING STRUCTURES for further details and guidelines.

1.3.6 Noise Control

The Contractor must adhere to all local noise ordinances including St. Johns County Ordinance No. 2015-19, or any new/updated noise ordinances. All hauling and excavation equipment including dredges and attendant plant 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 or ordinances pertaining to noise abatement. The use of horns, bells, or the use of whistle signals shall be held to the minimum necessary in order to ensure as safe and as quiet an operation as possible.

1.4 ENVIRONMENTAL PROTECTION

See section 01 57 20 ENVIRONMENTAL PROTECTION and Section 01 57 25 TURBIDITY AND DISPOSAL MONITORING.

1.5 NOTIFICATION OF COAST GUARD

1.5.1 Notice to Mariners

At least 15 days prior to any in water work, the Contractor shall notify the local US Coast Guard District of their intent to dredge including details of waterside equipment, staging areas, work zones, pipeline installation, etc., and request that it be published in the Local Notice to Mariners. A copy of the notification shall be provided to the County.

1.5.2 Dredging Aids

Prior to installation of any buoys or dredging aid markers, the Contractor shall obtain US Coast Guard approval.

1.6 SIGNAL LIGHTS

It is the Contractor's responsibility to make himself familiar with the rules and regulations of the US Coast Guard regarding lights and day signals. Lights and day signals shall be displayed by towing vessels with tows on which no signals can be displayed, vessels working on wrecks, dredges, and vessels engaged in laying cables or pipe or in submarine or bank protection operations. Lights shall be displayed on dredge pipelines, and day signals shall be displayed by vessels of more than 65 feet in length and floating plant vessels moored or anchored in a fairway or navigable channels where other vessels pass.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 DREDGING AND BEACH FILL PLAN

The Contractor shall submit a work plan prior to the start of work for approval by the County. The plan should include at a minimum:

a. Proposed order of work for beach fill operations
b. Project schedule
c. Proposed acceptance sections (not less than 500 feet in length)
d. Utility locate verification using the Sunshine 811 program
e. Equipment to be used for dredging and placement operations
f. Plan for pipeline and equipment storage, assembly, and installation
g. Description of methods to be used to prevent excessive excavation below the target dredge depth in borrow area N-3
h. Security Plan – description of methods the Contractor will use to exclude the public from work site, including fencing, security personnel, signage, etc.
i. Plan for placement of fill adjacent to structures/seawalls – description of placement method and equipment to be used

3.2 OVERALL WORK AREA PROVISIONS

The Contractor shall accomplish the work in such a manner so as to minimize disruption to road traffic and to use of the public beach, as well as keep all work areas in a neat, orderly and in a safe manner. See Section 01 50 02 TEMPORARY CONSTRUCTION FACILITIES.

3.3 EXCAVATION

3.3.1 Dredge Location Control

The contractor must maintain, in continuous operation, an electronic positioning system for the dredge plant with horizontal accuracy of +/- 3 feet and vertical indication of the draghead(s) accurate to within 1 foot. The positioning equipment shall be capable of receiving real-time tide adjustments.

3.3.2 Dredge Tracking Plots

The Contractor must prepare and submit each week a color-coded plot, in the project reference datum, of the draghead depicting the daily vertical and horizontal limits of dredging that day. The plot should clearly indicate any horizontal or vertical dredge violations and show dredge status such as dredging, transiting, unloading, or stand-by. The plots should include at a minimum:

j. Load number and dredge name
k. Date and time for range of data included
l. A scale, north arrow, datum, and legend
m. Borrow area name, coordinates, and target dredge depth shown on drawings
n. Legible text indicating actual depth dredged, corrected for tide and draft

3.4 TRANSPORT OF EXCAVATED MATERIALS

3.4.1 A hopper dredge must be used for transport of the excavated material. Overflow at the borrow site during loading will be permitted. No overflow or spillout will be permitted during transport to the discharge site.

3.5 BEACH FILL

3.5.1 Construction

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 County reserves the right to vary the width and grade of the dune or 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 County in making any change in the lines and grades.

The Contractor shall build sand ramps over the shore pipe at all public beach access walkways that access the beach through the dune system throughout the project area to allow public use of the beach which is not in the active construction zone. The sand ramps shall be at least 15 feet wide sloped on a

one (1) vertical to twelve (12) horizontal slope. Additional ramps shall be constructed over the shore pipe at a minimum spacing of 200 feet.

3.5.2 Placement

Prior to placement of fill, the Contractor shall remove from the site of the work all snags, driftwood, concrete rubble, reinforcement bars, trash, 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 County.

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 cross section.

3.5.3 Tolerances

There is no overfill tolerance on this contract. A tolerance of three quarter foot below (-0.75') the design template will be allowed for acceptance and payment of beach fill sections. The tolerance shall extend from the landward limit of fill to the construction toe of slope. The Contractor will not be allowed to stockpile material above the described tolerance to compensate for material expected to be removed by wave action. Compensating slopes will not be allowed for payment or acceptance purposes.

3.5.4 Misplaced Materials

The Contractor shall not place material outside the fill template or in any areas other than those described in the project plans. If material is placed in areas other than the approved placement areas, the Contractor must notify the County, and the Contractor may be required to remove the misplaced material and redeposit it where directed at the Contractor's expense.

3.6 QUALITY CONTROL

3.6.1 Compliance Criteria for Beach Fill Material

Beach fill material shall meet the requirements of the FDEP approved project Sediment Quality Assurance/Quality Control Plan and shall conform to the compliance values presented in Table 1 (all sieve sizes refer to U.S. Std. sieves) below for the respective beach sites. The sand shall be similar to the existing beach sediments in color and texture. Beach fill material shall be clean sand from the permitted source and free of unacceptable materials, such as construction debris, asphalt, rocks greater than ¾ inch, clay balls, and other organics, oil, pollutants and any other foreign materials. Any unacceptable

material remaining in the fill shall be removed and disposed of by the Contractor as approved by the County.

Table 1 – Fill Material Compliance Values

Sediment Parameter	Parameter Definition	Compliance Value
Maximum Silt Content	Passing #230 sieve	5%
Maximum Fine Gravel Content	Retained on #4 sieve	5%
Munsell Color Value	Moist Value (chroma = 1)	6 or lighter

The compliance values described above refer to the average values assessed over a 10,000 square-foot area of the placed fill material. Material which exceeds the compliance values listed in Table 1 at the respective beach sites and which exceeds the natural occurrence within a 10,000 square-foot area, will be classified as noncompliant. Due to the natural variability of the fill material, it is recognized that individual samples may deviate from the specified compliance values.

3.6.2 Beach Fill Observation and Sampling

Beach fill observation shall be performed at all times during active beach placement. The Contractor shall collect a sediment sample for each load delivered to the beach, at not less than 200-foot intervals of newly constructed beach, to visually assess grain size, Munsell color, shell content, and silt content. The sample shall be a minimum of 1 U.S. pint and shall be archived with the date, time, and location of the sample collected. If the Contractor believes that the beach fill material does not comply with the fill material compliance values, the Contractor shall notify the County immediately. The visual assessment results for each sample collected shall be noted on the Contractor's daily quality control report. All samples shall be stored by the Contractor until project completion, at which point they will become the property of the County.

3.6.3 Remediation

If the County determines that the beach fill material does not comply with the sediment compliance values described above, the Contractor may be asked to cease material placement and remediate. The method for remediation shall be determined by the Contractor and approved by the County.

If remediation is required by the County beyond that which is described by Line Item 06 and Line Item 07 of Section 01 22 00 MEASUREMENT AND PAYMENT

and paragraph 3.6.4 below, the Contractor shall submit a plan for approval by the County describing how the Contractor intends to quantify and handle the unacceptable material, what the Contractor will do to ensure the remediation has been adequately accomplished, and what steps the Contractor will take to prevent additional placement of non-compliant material. The requirement for remediation by the County will result in a change order, and the cost for such action will be negotiated between the Contractor and the County.

3.6.4 Screening and Removal: There is the potential for encountering buried debris in the borrow area. If the County determines screening is required for material which has been placed on the beach, the Contractor shall screen the placed material. The method by which the Contractor screens shall be of their own design and shall be constructed so as to ensure compliance of the material placed. Screened material shall be removed and disposed at a location proposed by the Contractor and accepted by the County. Crushing of unacceptable material and dispersing in the fill material shall not be allowed. The method by which the Contractor removes the retained material shall be approved by the County and constructed so as to ensure removal of all unacceptable material.

3.6.5 Surveys

Surveys used for acceptance and payment purposes will be conducted by Gahagan & Bryant Associates, Inc. (GBA) under contract to the County and Engineer. GBA will be on site during daylight hours each day that work is underway to perform surveys as needed when conditions allow. It is anticipated that the surveyor will perform daily surveys and will closely coordinate data collection and sharing with the Engineer and Contractor's fill managers. Coordination between the Contractor and GBA will be required of the Contractor to ensure that Before Dredge (BD), After Dredge (AD), and check surveys are performed promptly.

3.7 INSPECTION

3.7.1 Daily Beach Walkthroughs

The Contractor shall make accommodations to have his personnel, including the fill foreman and member of project management, meet with the County inspector and walk the beach ahead of the day's expected placement operations. The purpose of this meeting will be to discuss the Contractor's approach for fill placement for that stretch and determine the best course of action for placement in front of each property. A daily plan for landward tie-in will be established. In the event that circumstances have changed since the construction documents were released, the County inspector and Contractor

personnel would make adjustments to the dune design to accommodate. Any changes agreed upon during the daily walkthrough shall be documented in writing (email is acceptable) by the Contractor prior to material placement.

3.7.2 Dressing for Final Acceptance

Immediately upon completion of beach fill placement and removal of equipment, the Contractor shall dress the beach for final inspection and acceptance. The final dressing is required prior to tilling. The contractor shall produce a smooth uniform surface, free from humps, depressions, escarpments, grade stakes, and the like.

END OF SECTION 35 20 25

SECTION 35 20 28

NATIONAL DREDGING QUALITY MANAGEMENT PROGRAM – HOPPER DREDGE

PART 1 GENERAL

1.1 DESCRIPTION

Per the Department of the Army Permit, the work under this contract requires the use of the National Dredging Quality Management (DQM) system to manage the dredge's status at all times during the contract and manage data history.

This performance-based specification section identifies the minimum required output as well as the precision and instrumentation requirements. The requirements may be satisfied using equipment and technical procedures selected by the Contractor.

1.2 SUBMITTALS

1.2.1 Preconstruction

a. Letter of National Dredging Quality Management Program Certification

1.3 PAYMENT

No separate payment shall be made for the installation, operation, and maintenance of the DQM-certified system as specified herein for the duration of the dredging operations; all costs in connection therewith shall be considered a subsidiary obligation of the Contractor and covered under the contract unit price for beach fill in the bidding schedule.

1.4 NATIONAL DREDGING QUALITY MANAGEMENT PROGRAM CERTIFICATION

The Contractor is required to have a current – within the last calendar year – certification from the DQM Program for the hopper dredge instrumentation system to be used under this contract. Standard Operating Procedures (SOP) and criteria for certification are presented on the DQM website at https://dqm.usace.army.mil.

1.5 DREDGE PLANT INSTRUMENTATION PLAN (DPIP)

The Contractor shall have a digital copy of the Dredge Plant Instrumentation Plan (DPIP) on file with the DQM Support Center. While working on site, the Contractor shall also maintain on the dredge a copy of the DPIP, which is easily accessible to County personnel at all times. This document shall accurately describe the sensors used, the configuration of the system, how sensor data will be collected, how

quality control on the data will be performed, and how the sensors/data-reporting equipment will be calibrated and repaired if it fails. A description of the computed dredge-specific data and how the sensor data will be transmitted to the DQM database shall also be included. Prior to the start of work, the Contractor shall submit to the DQM Support Center any addendum or modifications made to the plan subsequent to its original submission. Requirements and a template for the DPIP are available on the DQM website at https://dqm.usace.army.mil.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 REQUIREMENTS FOR REPORTED DATA

The Contractor shall provide, operate, and maintain all hardware and software to meet these specifications. The Contractor shall be responsible for replacement, repair, and calibration of sensors and other necessary data acquisition equipment needed to supply the required data.

Repairs shall be completed within 48 hours of any sensor failure. Upon completion of a repair, replacement, installation, modification, or calibration, the Contractor shall notify the County. The County may request recalibration of sensors or other hardware components at any time during the contract as deemed necessary.

The Contractor shall keep a log of sensor repair, replacement, installation, modification, and calibration in the dredge's onboard copy of the DPIP. The log shall contain a three-year history of sensor maintenance, including the time of the sensor failures (and subsequent repairs), the time and results of sensor calibrations, the time of sensor replacements, and the time that backup sensor systems were initiated to provide the required data. It shall also contain the name of the person responsible for the sensor work.

Sensors installed shall be capable of collecting parameters within specified accuracies and resolutions indicated in the following subparagraphs.

Reported sensor values for ullage, draft, and draghead depth should represent a weighted average with the highest and lowest values not included in the calculated average for the given interval. This information should be documented in the DPIP sections that say "Calculations done external to the instrumentation."

3.1.1 Date and Time

The date and time shall be reported to the nearest second and referenced to UTC time based on a 24-hour format: *mm*/*dd*/*yyyy hh*:*mm*:*ss*. The reported time shall be the time reported by the GPS in the NMEA string.

3.1.2 Load Number

A load number shall document the end of a disposal event. Load numbering will begin at number 1 at the start of the permit and will be incremented by 1 at the completion of each disposal event or emptying of the hopper. Whenever possible, the load number shall be calculated off of the sensors aboard the dredge and shall be a mathematically repeatable routine. Efforts shall be made to include logic that avoids false load number increments while also not allowing the routine to miss any disposal event. If manual incrementing of the load number is in place, extra attention shall be paid to this value in the quality control process.

3.1.3 Horizontal Positioning

All locations shall be obtained using a positioning system operating with a minimum accuracy level of 1 to 3 meters horizontal Circular Error Probable (CEP). Positions shall be reported as Latitude/Longitude WGS 84 in decimal degrees. West Longitude and South Latitude values are reported as negative.

b. Vessel Horizontal Positioning

Vessel horizontal positioning shall be recorded as geographic coordinates of the vessel as indicated by the location of the GPS antenna.

c. Draghead Horizontal Positioning

Draghead horizontal positioning shall be recorded as geographic coordinates of the heel on the centerline of the draghead(s). Any offset calculations from the GPS antenna should be described in the DPIP.

3.1.4 Hull Status

Open/closed status of the hopper dredge, corresponding to the split/non-split condition of a split-hull hopper dredge, shall be monitored. For dredges with hopper doors, the status of a single door that is the first opened during normal disposal operations may be monitored. An “open” value shall indicate that the hopper door is open or, in the case of split-hull dredges, that the hull is split. A “closed” value indicates that the hopper doors are closed or, in the case of split-hull dredges, that the hull is not split.

3.1.5 Dredge Course

Dredge course-over-ground (COG) shall be provided using industry standard equipment. The Contractor shall provide dredge course-over-ground to the

nearest whole degree with values from 000 (true north) to 359 degrees referenced to a clockwise positive direction convention.

3.1.6 Dredge Speed

Dredge speed-over-ground shall be provided in knots using industry standard equipment with a minimum accuracy of 1 knot and resolution to the nearest 0.1 knot.

3.1.7 Dredge Heading

Dredge heading shall be provided using industry-standard equipment. The dredge heading shall be accurate to within 5 degrees and reported to the nearest whole degree with values from 000 (true north) to 359 degrees referenced to a clockwise positive direction convention.

3.1.8 Tide

Tide data shall be obtained using appropriate equipment to give the water level with an accuracy of ± 0.1 foot and a resolution of 0.01 foot. Tide values above project datum described in the dredging specification shall be entered with a positive sign and those below with a negative sign.

3.1.9 Draft

All reported draft measurements shall be in feet, tenths, and hundredths with an accuracy of ± 0.1 foot relative to observed physical draft readings. The measurements shall be reported at a resolution of two decimal places (hundredths of a foot). The reported forward draft value shall be equal to the sum of the visual forward port and starboard draft mark readings divided by two. The reported aft draft value shall be equal to the sum of the visual aft port and starboard draft mark readings divided by two. Forward draft, aft draft, and average draft will be reported. Sensors shall be placed at an optimum location on the vessel to be reflective of observed physical draft mark readings at any trim or list. Minimum accuracies are conditional to relatively calm water. The sensor value reported shall be an average of at least ten samples per event, with at least one maximum value and one minimum value removed, and the minimum eight remaining values averaged. When the average draft is calculated for the purpose of determining displacement, significant digits for average draft shall be maintained such that if forward draft was 0.15 and aft draft was 0.1, then the average draft would be 0.125.

3.1.10 Hopper Ullage Sounding

All reported ullage soundings shall be in feet, tenths, and hundredths with an accuracy of ± 0.1 foot with respect to the coaming and be representative of the

forward and aft extents of the hopper as close to the centerline as is possible. The measurements shall be reported at a resolution of two decimal places (hundredths of a foot). Forward ullage and aft ullage soundings will be reported. Sensors should be mounted so as to avoid discharge flume turbulence, foam, and any structure that could produce sidelobe errors. If sensors must be offset from the centerline of the hopper, they should be offset to opposite sides of the vessel. If more than one fore or one aft sensor are used, they shall be placed near the corners of the hopper, and the average value of the fore sensors and the average value of the aft sensors shall be reported. The sensor value reported shall be an average of at least ten samples per event, with at least one maximum value and one minimum value removed and the minimum eight remaining values averaged. When the average ullage is calculated for the purpose of determining hopper volume, significant digits for average ullage shall be maintained such that if forward ullage was 0.15 and aft ullage was 0.1, then the average ullage would be 0.125.

3.1.11 Hopper Volume

Hopper volume shall be reported in cubic yards, based on the most accurate method available for the dredge. The minimum standard of accuracy for hopper volume is interpolation from the certified hopper volume table, based on the average fore and aft ullage soundings.

3.1.12 Displacement

Dredge displacement shall be reported in long tons, based on the most accurate method available for the dredge. The minimum standard of accuracy for displacement is interpolation from the displacement table, based on the average draft. For this contract the density of water used to calculate displacement shall be 1,027-1,030 kg/cubic meter (1.027-1.03 g/cubic meter), and it shall be used for an additional interpolation between the fresh and saltwater tables.

3.1.13 Empty Displacement

Empty displacement shall be reported in long tons and shall be the lightship value of the dredge, or the weight of the dredge with no material in the hopper, adjusted for fuel and water consumption.

3.1.14 Draghead Depths

Draghead depths shall be reported with an accuracy of ± 0.5 foot and a resolution to the nearest 0.1 foot as measured from the surface of the water with no tidal adjustments. Minimum accuracies are conditional to relatively calm water. The sensor value reported shall be an average of at least ten

samples per event, with at least one maximum value and one minimum value removed and the minimum eight remaining values averaged.

3.1.15 Slurry Densities

A density-metering device, calibrated according to the manufacturer's specifications, shall be used to record the slurry density of the material being moved to the nearest 0.001 g/cc with an accuracy of ± 0.01 g/cc. If the manufacturer does not specify a frequency of recalibration, calibration shall be conducted prior to commencement of work.

3.1.16 Slurry Velocities

A flow-metering device, calibrated according to the manufacturer's specifications, shall be used to record the slurry velocity of the material being moved to the nearest 0.01 fps with an accuracy of ± 0.5 fps. If the manufacturer does not specify a frequency of recalibration, calibration shall be conducted prior to commencement of work. The slurry velocity shall be measured in the same pipeline inside diameter as that used for the slurry density measurement.

3.1.17 Pump RPM

The RPM of any pump being used to move material shall be measured with the highest level of accuracy that is standard on the vessel operational displays, either at the bridge, at the drag tender's controls, or in the engine room. Dredges with multiple pumps per side shall report RPM for the pump that best describes the dredging process (typically the outboard pump).

3.1.18 Sea Suction Valve for Dragarm

If sea suction can be taken to bypass suction through the draghead, the sea suction location and valve status will be reported. The status of the valve will change from "closed" to "open" when the valve starts to open and will register "closed" when the valve is fully closed. When applicable, the state of the latch will be reported as "true" or "false." The sea suction location shall be reported in a standard non-changing name string of no more than 20 characters. These field values will always occur in the XML string as a set. The DQM system can accommodate only up to four unique sea suction locations. Suggested options for the naming convention can be found in the example dataset in Paragraph 3.2.8, "Data Format."

3.1.19 Pumpout

When the hopper dredge is being pumped out, a “true” value shall be reported; when it is not, a “false” value shall be reported. The only permissible values are “true” and “false.”

3.2 NATIONAL DREDGING QUALITY MANGEMENT PROGRAM SYSTEM REQUIREMENTS

The Contractor’s DQM system shall be capable of collecting, displaying, and transmitting information to the DQM database. The applicable parameters from Paragraph 3.1, “Requirements for Reported Data,” shall be recorded as events locally and continually transmitted to the DQM database anytime an Internet connection is available. The Dredge shall be equipped with a DQM computer system consisting of a computer, monitor, keyboard, mouse, data modem, UPS, and network hub. The computer system shall be a standalone system, exclusive to the DQM monitoring system, and will have USACE DQM software installed on it. If a hardware problem occurs, or if a part of the system is physically damaged, then the Contractor shall be responsible for repairing it within 48 hours of determination of the condition.

3.2.1 Computer Requirements

The Contractor shall provide a dedicated onboard computer for use by the DQM system. This computer shall run USACE software and receive data from the Contractor’s data-reporting interface. This computer must meet or exceed the following performance specifications:

CPU	Intel or AMD processor with a (non-overclocked) clock speed of at least 1.6 gigahertz (GHz)
Hard drive	250 gigabytes (GB); internal
RAM	4 gigabytes (GB)
Ethernet adapter	Internal network card with an RJ-45 connector
Ports	1 free serial port with standard 9-pin connectors; 1 free USB port
Other hardware	Keyboard, mouse, monitor

The Contractor shall install a fully licensed copy of Windows 7 Professional Operating System or later on the computer specified above. The Contractor shall also install any necessary manufacturer-provided drivers for the installed hardware.

This computer shall be located and oriented to allow data entry and data viewing as well as to provide access to data ports for the connection of external hardware.

3.2.2 Software

The DQM computer's primary function is to transmit data to the DQM shoreside database. No other software which conflicts with this function shall be installed on this computer. The DQM computer will have the USACE-provided Dredging Quality Management Onboard Software (DQMOBS) installed on it by DQM personnel along with USACE-selected software for remote support and management.

3.2.3 UPS

The Contractor shall supply an Uninterruptible Power Supply (UPS) for the computer and networking equipment. The UPS shall provide backup power at 1 kVA for a minimum of ten minutes. The UPS shall interface with the DQM computer to communicate UPS status. The Contractor shall ensure that sufficient power outlets are available to run all specified equipment.

3.2.4 Internet Access

The Contractor shall maintain an Internet connection capable of transmitting real-time data to the DQM server and supporting remote access as well as enough additional bandwidth to clear historically queued data when a connection is re-obtained. If connectivity is lost, unsent data shall be queued and transmitted upon restoration of connectivity. Delays in pushing real-time data to the DQM database should not exceed four hours. Exceptions to these requirements may be granted by the DQM Support Center on a case-by-case basis with consideration for contract-specific requirements, site-specific conditions, and extreme weather events.

The Contractor shall acquire and install all necessary hardware and software to make the Internet connection available for data transmission to the DQM web service. The hardware and software must be configured to allow the DQM Support Center remote access to this computer. Coordination between the dredging company's IT and the DQM Support Center may be required in order to configure remote access though any security, firewall, router, and telemetry systems. Telemetry systems must be capable of meeting these minimum reporting requirements in all operating conditions.

3.2.5 Data Routing Requirements

Onboard sensors shall continually monitor dredge conditions, operations, and efficiency and route this information into the shipboard dredge-specific system (DSS) computer to assist in guiding dredge operations. Portions of this Contractor-collected information shall be routed to the DQM computer on a real-time basis. Standard sensor data shall be sent to the DQM computer via an RS-232 9600- or 19200-baud serial interface. The serial interface shall be configured as 8 bits, no parity, and no flow control.

3.2.6 Data Reporting Frequency

Data shall be logged as a series of events. Each event will consist of a dataset containing dredge information as per Paragraph 3.1, “Requirements for Reported Data.” Each set of measurements (time, position, etc.) will be considered an event. Any required information in Paragraph 3.1 that is not an averaged variable (draft and ullage) shall be collected within 1 second of the reported time. A data string for an event shall be sent to the DQM computer every 6 to 12 seconds, and this interval shall remain constant throughout the contract; data strings shall never be transmitted more frequently than once per every 5 seconds. Any averaged variable must be collected and computed within this sampling interval.

3.2.7 Data Format

Data shall be reported as an eXtensible Markup Language (W3C standard XML 1.0) document as indicated below. Line breaks and spaces are added for readability, but the carriage return, line feed character combination is added only to delineate records (HOPPER _DREDGING_DATA tag) for actual data transmission.

```
<?xml version="1.0"?>
  <HOPPER_DREDGING_DATA version = “2.0”>
    <DREDGE_NAME>string32</DREDGE_NAME>
      <HOPPER_DATA_RECORD>
        <DATE_TIME>time date string</DATE_TIME>
        <CONTRACT_NUMBER>string32</CONTRACT_NUMBER>
        <LOAD_NUMBER>integer string</LOAD_NUMBER>
        <VESSEL_X coord_type = “LL”>floating point string</VESSEL_X>
        <VESSEL_Y coord_type = “LL”>floating point string</VESSEL_Y>
        <PORT_DRAG_X coord_type = “LL”>floating point string</PORT_DRAG_X>
        <PORT_DRAG_Y coord_type = “LL”>floating point string</PORT_DRAG_Y>
        <STBD_DRAG_X coord_type = “LL”>floating point string</STBD_DRAG_X>
        <STBD_DRAG_Y coord_type = “LL”>floating point string</STBD_DRAG_Y>
        <HULL_STATUS>OPEN/CLOSED string</HULL_STATUS>
        <VESSEL_COURSE>floating point string<VESSEL_COURSE >
```

<VESSEL_SPEED>**floating point string**</VESSEL_SPEED>
<VESSEL_HEADING>**floating point string**</VESSEL_HEADING>
<TIDE>**floating point string**</TIDE>
<DRAFT_FORE>**floating point string**</DRAFT_FORE>
<DRAFT_AFT>**floating point string**</DRAFT_AFT>
<ULLAGE_FORE>**floating point string**</ULLAGE_FORE>
<ULLAGE_AFT>**floating point string**</ULLAGE_AFT>
<HOPPER_VOLUME>**floating point string**</HOPPER_VOLUME>
<DISPLACEMENT>**floating point string**</DISPLACEMENT>
<EMPTY_DISPLACEMENT>**floating point string**</EMPTY_DISPLACEMENT>
<DRAGHEAD_DEPTH_PORT>**floating point string**</DRAGHEAD_DEPTH_PORT>
<DRAGHEAD_DEPTH_STBD>**floating point string**</DRAGHEAD_DEPTH_STBD>
<PORT_DENSITY>**floating point string**</PORT_DENSITY>
<STBD_DENSITY>**floating point string**</STBD_DENSITY>
<PORT_VELOCITY>**floating point string**</PORT_VELOCITY>
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<PUMP_RPM_PORT>**floating point string**</PUMP_RPM_PORT>
<PUMP_RPM_STBD>**floating point string**</PUMP_RPM_STBD>
<VALVE_1_LOCATION>**string32**</VALVE_1_LOCATION>
<VALVE_1_STATUS>**open/closed**</VALVE_1_STATUS>
<VALVE_1_LATCHED>**true/false**</VALVE_1_LATCHED>
<VALVE_2_LOCATION>**string32**</VALVE_2_LOCATION>
<VALVE_2_STATUS>**open/closed**</VALVE_2_STATUS>
<VALVE_2_LATCHED>**true/false**</VALVE_2_LATCHED>
<VALVE_3_LOCATION>**string32**</VALVE_3_LOCATION>
<VALVE_3_STATUS>**open/closed**</VALVE_3_STATUS>
<VALVE_3_LATCHED>**true/false**</VALVE_3_LATCHED>
<VALVE_4_LOCATION>**string32**</VALVE_4_LOCATION>
<VALVE_4_STATUS>**open/closed**</VALVE_4_STATUS>
<VALVE_4_LATCHED>**true/false**</VALVE_4_LATCHED>
<PUMP_OUT_ON>**true/false/unknown string**</PUMP_OUT_ON>
</HOPPER_DATA_RECORD>
</HOPPER_DREDGING_DATA>
Carriage Return – ASCII value 13
Line Feed – ASCII value 10

Example

```
<?xml version="1.0"?>
  <HOPPER_DREDGING_DATA version = “2.0”>
    <DREDGE_NAME>Essayons</DREDGE_NAME>
      <HOPPER_DATA_RECORD>
        <DATE_TIME>04/11/2002 13:12:05</DATE_TIME>
        <CONTRACT_NUMBER>GDSNWP-11-G-0001</CONTRACT_NUMBER>
```

```
            <LOAD_NUMBER>102</LOAD_NUMBER>
            <VESSEL_X coord_type = "LL">-80.123333</VESSEL_X>
            <VESSEL_Y coord_type = "LL">10.123345</VESSEL_Y>
            <PORT_DRAG_X coord_type = "LL">-80.1233371</PORT_DRAG_X >
            <PORT_DRAG_Y coord_type = "LL">10.12335</PORT_DRAG_Y >
            <STBD_DRAG_X coord_type = "LL">-80.123339</STBD_DRAG_X >
            <STBD_DRAG_Y coord_type = "LL">10.123347</STBD_DRAG_Y >
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            <VESSEL_COURSE>258</VESSEL_COURSE>
            <VESSEL_SPEED>3.4</VESSEL_SPEED>
            <VESSEL_HEADING>302</VESSEL_HEADING>
            <TIDE>-0.1</TIDE>
            <DRAFT_FORE>10.05</DRAFT_FORE>
            <DRAFT_AFT>15.13</DRAFT_AFT>
            <ULLAGE_FORE>10.11</ULLAGE_FORE>
            <ULLAGE_AFT>10.22</ULLAGE_AFT>
            <HOPPER_VOLUME>2555.2</HOPPER_VOLUME>
            <DISPLACEMENT>4444.1</DISPLACEMENT>
            <EMPTY_DISPLACEMENT>2345.0</EMPTY_DISPLACEMENT>
            <DRAGHEAD_DEPTH_PORT>55.10</DRAGHEAD_DEPTH_PORT>
            <DRAGHEAD_DEPTH_STBD>53.21</DRAGHEAD_DEPTH_STBD
            <PORT_DENSITY>1.02</PORT_DENSITY>
            <STBD_DENSITY>1.03</STBD_DENSITY>
            <PORT_VELOCITY>22.1</PORT_VELOCITY>
            <STBD_VELOCITY>23.3</STBD_VELOCITY>
            <PUMP_RPM_PORT>55</PUMP_RPM_PORT>
            <PUMP_RPM_STBD>54</PUMP_RPM_STBD>
            <VALVE_1_LOCATION>Starboard Dragarm</VALVE_1_LOCATION>
            <VALVE_1_STATUS>open</VALVE_1_STATUS>
            <VALVE_1_LATCHED>true</VALVE_1_LATCHED>
            <VALVE_2_LOCATION>Port Dragarm</VALVE_2_LOCATION>
            <VALVE_2_STATUS>closed</VALVE_2_STATUS>
            <VALVE_2_LATCHED>false</VALVE_2_LATCHED>
            <VALVE_3_LOCATION>Port Sea Chest</VALVE_3_LOCATION>
            <VALVE_3_STATUS>closed</VALVE_3_STATUS>
            <VALVE_3_LATCHED>false</VALVE_3_LATCHED>
            <VALVE_4_LOCATION>Starboard Sea Chest</VALVE_4_LOCATION>
            <VALVE_4_STATUS>open</VALVE_4_STATUS>
            <VALVE_4_LATCHED>false</VALVE_4_LATCHED>
            <PUMP_OUT_ON>false</PUMP_OUT_ON>
          </HOPPER_DATA_RECORD>
      </HOPPER_DREDGING_DATA>
    <cr>
    <lf>
```

```
<DREDGE_NAME>Essayons</DREDGE_NAME>
  <HOPPER_DATA_RECORD>
    <DATE_TIME>04/11/2002 13:12:10</DATE_TIME>
    <CONTRACT_NUMBER>GDSNWP-11-G-0001</CONTRACT_NUMBER>
    <LOAD_NUMBER>102</LOAD_NUMBER>
    <VESSEL_X coord_type = "LL">-80.123334</VESSEL_X>
    <VESSEL_Y coord_type = "LL">10.123346</VESSEL_Y>
    <PORT_DRAG_X coord_type = "LL">-80.1233372</PORT_DRAG_X >
    <PORT_DRAG_Y coord_type = "LL">10.12336</PORT_DRAG_Y >
    <STBD_DRAG_X coord_type = "LL">-80.123340</STBD_DRAG_X >
    <STBD_DRAG_Y coord_type = "LL">10.123348</STBD_DRAG_Y >
    <HULL_STATUS>CLOSED</HULL_STATUS>
    <VESSEL_COURSE>259</VESSEL_COURSE>
    <VESSEL_SPEED>3.5</VESSEL_SPEED>
    <VESSEL_HEADING>300</VESSEL_HEADING>
    <TIDE>-0.1</TIDE>
    <DRAFT_FORE>10.00</DRAFT_FORE>
    <DRAFT_AFT>15.15</DRAFT_AFT>
    <ULLAGE_FORE>10.15</ULLAGE_FORE>
    <ULLAGE_AFT>10.20</ULLAGE_AFT>
    <HOPPER_VOLUME>2555.5</HOPPER_VOLUME>
    <DISPLACEMENT>4444.0</DISPLACEMENT>
    <EMPTY_DISPLACEMENT>2345.0</EMPTY_DISPLACEMENT>
    <DRAGHEAD_DEPTH_PORT>55.15</DRAGHEAD_DEPTH_PORT>
    <DRAGHEAD_DEPTH_STBD>53.19</DRAGHEAD_DEPTH_STBD
    <PORT_DENSITY>1.00</PORT_DENSITY>
    <STBD_DENSITY>1.01</STBD_DENSITY>
    <PORT_VELOCITY>22.5</PORT_VELOCITY>
    <STBD_VELOCITY>23.3</STBD_VELOCITY>
    <PUMP_RPM_PORT>55</PUMP_RPM_PORT>
    <PUMP_RPM_STBD>54</PUMP_RPM_STBD>
    <VALVE_1_LOCATION>Starboard Dragarm</VALVE_1_LOCATION>
    <VALVE_1_STATUS>open</VALVE_1_STATUS>
    <VALVE_1_LATCHED>true</VALVE_1_LATCHED>
    <VALVE_2_LOCATION>Port Dragarm</VALVE_2_LOCATION>
    <VALVE_2_STATUS>closed</VALVE_2_STATUS>
    <VALVE_2_LATCHED>false</VALVE_2_LATCHED>
    <VALVE_3_LOCATION>Port Sea Chest</VALVE_3_LOCATION>
    <VALVE_3_STATUS>closed</VALVE_3_STATUS>
    <VALVE_3_LATCHED>false</VALVE_3_LATCHED>
    <VALVE_4_LOCATION>Starboard Sea Chest</VALVE_4_LOCATION>
    <VALVE_4_STATUS>open</VALVE_4_STATUS>
    <VALVE_4_LATCHED>false</VALVE_4_LATCHED>
    <PUMP_OUT_ON>false</PUMP_OUT_ON>
```

```
        </HOPPER_DATA_RECORD>
    </HOPPER_DREDGING_DATA>
<cr>
<lf>
```

3.2.8 Data Reporting

The system shall transmit correctly formatted event data XML strings to the DQM database continuously from mobilization until the last USACE post-dredging survey has been accepted. If the Internet connection (Paragraph 3.2.4, “Internet Access”) is non-operable, manual backups from the dredge computer of the XML data string which would have been transmitted to the DQM computer over the serial connection shall be performed for each day the device is inoperable and submitted to the DQM Support Center within 48 hours. This submission does not replace the requirement of correcting the issue affecting the automatic transmission of data. In the event of data transfer, transmission, or hardware failure, a manually recorded disposal log shall be maintained. It shall consist of a series of events. These events are start of dredging, end of dredging, pre-disposal, and post-disposal. Each event shall include time stamp (GMT), position (Latitude and Longitude WGS84), draft, ullage, volume, and displacement. Disposal logs shall be submitted on a daily basis to the Permit Project Manager during the time when the system is not operational.

3.2.9 Contractor Data Backup

The Contractor shall maintain an archive of all data sent to the DQM computer during the permit. The Permit Project Manager may require that the Contractor provide a copy of these data covering specified time periods. The data shall be provided in the XML format which would have been transmitted to the DQM computer. There shall be no line breaks between the parameters; each record string shall be on separate line. The naming convention for the files shall be <*dredgename*>_<*StartYYYYMMddhhmmss*>_ <*EndYYYYMMddhhmmss*>.txt. Data submission shall be via storage medium acceptable to the Permit Project Manager.

At the end of the dredging contact, the Contractor shall contact the DQM Support Center prior to discarding the data. The DQM Support Center will verify that all data has been received and appropriately archived before giving the Contractor discard permission. The Contractor shall then record in a separate section at the end of the dredge’s onboard copy of the DPIP the following information:

- Person who made the call

- Date of the call
- DQM representative who gave permission to discard

3.3 PERFORMANCE REQUIREMENTS

The Contractor's DQM system shall be fully operational at the start of dredging operations and fully certified prior to moving dredge material on the contract (see Paragraph 1.4, "National Dredging Quality Management Program Certification"). To meet specification requirements for operability, in addition to certification, the Contractor's system shall provide a data string with all values for all parameters while operating, as described in the specifications. Additionally, all hardware shall be compliant with hardware requirements (Paragraph 3.2.1, "Computer Requirements"). Quality data strings are considered to be those providing values for all parameters reported when operating according to the specification. Repairs necessary to restore data return compliance shall be made within 48 hours. Failure by the Contractor to report the required data within the specified time window for dredge measurements (see Paragraph 3.2.6, "Data Reporting Frequency," and Paragraph 3.2.8, "Data Reporting") will result in withholding of up to 10% of the contract progress payment.

END SECTION 35 20 28