

SECTION 35 20 23

DREDGING AND BEACH ~~FILL PLACEMENT~~DISPOSAL

PART 1 GENERAL

1.01 SUMMARY

- A. The work covered by this section consists of furnishing all labor, materials, equipment, supplies and material, and performing all operations necessary to hydraulically dredge the Intracoastal Waterway project limits (as indicated in the Project Drawings, **APPENDIX A**) and transfer all excavated material to the designated beach disposal location. Project drawings depict designated contractor staging areas at the beach disposal location.
- B. All watercraft associated with the execution of the permitted project shall only operate within waters of sufficient depth (a minimum eighteen [18] inches clearance must be maintained at all times) so as to preclude bottom scouring, prop dredging, grounding, and damage to the submerged bottom or submerged resources.
- C. Throughout all phases of the project, the Contractor shall remain responsible for ensuring that all work complies with the requirements specified in the regulatory permits (**APPENDIX B and APPENDIX C**). Failure to meet the environmental requirements of the aforementioned permits or of these Specifications may result in work stoppages or termination for default. The Contractor shall make no part of the time lost due to any such work stoppages the subject of claims for extensions of time or for excess costs or damages. If Contractor fails or refuses to promptly repair any damage caused by violation of the provisions of these permits and/or Specifications, the Owner may have the necessary work performed and charge the cost thereof to the Contractor.
- D. Throughout all phases of the project, the Contractor shall remain responsible for ensuring that all work complies with the requirements specified in the project's Department of Army and FDEP permits. Failure to meet the environmental protection requirements of the aforementioned permits or of these Specifications may result in work stoppages or termination for default. Contractor shall make no part of the time lost due to any such work stoppages the subject of claims for extensions of time or for excess costs or damages. If Contractor fails or refuses to promptly repair any damage caused by violation of the provisions of these permits and/or Specifications, Owner may have the necessary work performed and charge the cost thereof to Contractor.
- E. Work done in violation of the specifications or a verbal or written stop order of Engineer will be considered as unsatisfactory progress for purposes of progress payments in accordance with Subparagraph 14.02.B of the General Conditions.

1.02 DEFINITIONS

- A. Limits of Dredging: The area in which the dredge is free to excavate material. Anchoring, spudding of vessels, storage, stockpiling or access of equipment on, in, over or through submerged aquatic vegetation is strictly prohibited.
- B. Required Depth: The material actually removed from the designated areas to be dredged, to a depth of not more than the "Project Depth" as shown on the drawings, will be estimated and paid

for in accordance with the provisions contained in SECTION 01 29 00 MEASUREMENT AND PAYMENT.

- C. Allowable Over depth: To cover the inaccuracies of the dredging process, material actually removed from the designated areas to a depth below the required depth of not more than the allowable over depth shown on the drawings, will be measured and paid for in accordance with the provisions contained in in SECTION 01 29 00 MEASUREMENT AND PAYMENT.
- D. Side Slopes: Although dredging of side slope material may be necessary to provide the required project channel dimensions (depth and width), the side slopes shown on the drawings are provided for payment purposes only. Side slopes may be formed by box cutting, step cutting, or dredging along the side slope. Material actually removed, confined by the "Dredge Limits", to provide for final side slopes not flatter than that shown on the Project Drawings, but not in excess of the amount originally lying above the limiting side slope, will be measured and paid for in accordance with SECTION 01 29 00 MEASUREMENT AND PAYMENT

1.03 SUBMITTALS

The following shall be submitted in accordance with SECTION 01 33 00 SUBMITTAL PROCEDURES:

- A. Work Plan
 - 1. At least fifteen (7) calendar days before the scheduled pre-construction conference, the Contractor shall submit to Engineer for approval, a dredge plan that provides for a comprehensive summary of proposed project methodology (equipment, material transport, dredge material placement, dredge material placement, daily dredging productivity), operational controls (quality control, minimization of marine and upland traffic delays, permit compliance), security, and turbidity management/monitoring procedures to be implemented. The plan shall also include a specific discussion on staging areas, work sequencing, and minimization of impacts to recreational users of the Intracoastal Waterway.
- B. Verification that Dredging Operations Remain Within the Limits of Dredging
 - 1. Contractor shall verify that the dredge cutter head remains within the Limits of Dredging as defined on the Drawings. Contractor shall have equipment on the dredge that continuously measures vertical and horizontal location of the cutter head, drag arms, dustpan, or clamshell and is interfaced with cut depth positioning equipment. Prior to commencing Work, Contractor shall furnish specifications for this equipment, calibration information, and limits of accuracy. In addition, throughout dredging operations, this information shall be submitted to Engineer with the Daily Report of Operations.
- C. Notice of Intent to Dredge
 - 1. Prior to commencement of the work on this contract, Contractor shall notify the Commander, Seventh Coast Guard District in Miami, Florida of his intended operations to dredge and request that it be published in the Local Notice to Mariners. This notification must be given in sufficient time so that it appears in the Notice to Mariners at least two weeks prior to the commencement of this dredging operation. A copy of the notification shall be provided to Engineer.

D. Notification of Navigation Aids Relocation

1. Unless expressly stated in the Drawings, Contractor shall not remove, change the location of, obstruct, willfully damage, make fast to, or interfere with any aid to navigation without written consent from the U.S. Coast Guard. Thirty days in advance of the dredging adjacent to any navigation aid that requires relocation, Contractor shall notify in writing the Commander, Seventh Coast Guard District in Miami, Florida. Contractor shall contact the U.S. Coast Guard for information concerning the position to which these aids will be relocated. Contractor will provide a copy of any correspondence to Engineer.

E. Temporary Pipeline Crossing Shop Drawing

1. The Contractor shall construct a temporary ramp/bridge over the dredge discharge pipeline that crosses over the south jetty of Ft. Pierce Inlet. The ramp shall be ADA compliant and include a non-skid surface. The Contractor shall maintain the ramp in good condition at all times during the project.

F. Daily Report of Operations

1. For each 24-hour period of dredging operations, the Contractor shall prepare and submit to Engineer one (1) copy of the Daily Report of Operations. A sample daily report form is provided in **APPENDIX H**. These reports shall be submitted to Engineer in Adobe PDF format by 5:00 pm on the day following the 24-hour period covered by the report. Upon completion of the job, Contractor shall summarize the daily reports in a consolidated job report and submit this report to Engineer in electronic format.

G. Notification of Discovery of Historical Period Shipwreck Sites

1. Contractor shall immediately notify Engineer if any shipwreck, artifact, or other objects of antiquity that have scientific or historical value, or are of interest to the public, are discovered, located, and/or recovered. Contractor acknowledges that the site(s), articles, or other materials are the property of the State of Florida, with title vested in the Department of State, Division of Historical Resource.

H. Notice of Misplaced Material

1. Contractor shall immediately notify the U.S. Coast Guard Marine Safety Office and the Engineer of any misplaced material (e.g., dredge pipe, cable, etc.).

I. Pre- and Post-Construction Bathymetric Surveys

1. At least seven (7) days prior to the commencement of dredging activities, Contractor shall perform a pre-construction bathymetric survey of the project dredge area. Survey lines shall be made along the centerline of the channel, along each quarter channel, as well as at a maximum of 100-foot intervals perpendicular to the centerline of the channel, unless utilizing a multibeam sounder. Survey lines shall also provide full coverage of channel side slopes. Note that all dredging surveys used to determine pay quantities shall be conducted by an Engineer-approved bathymetric surveyor licensed in the State of Florida. The Engineer must review and approve the pre-construction bathymetric survey prior to any dredging activity.
2. Within seven (7) days of the completion of construction activities within an acceptance section, the Contractor shall perform the post-construction bathymetric survey (by equivalent methods, standards, and density to the pre-construction dredging survey). Upon submittal to the Engineer, the surveys shall be reviewed for accuracy,

completeness, and to calculate payment quantities relative to the pre-construction bathymetric survey or progress payment surveys. The payment quantities, within the permitted template, shall be shown on the front cover of each Acceptance Section survey and be sealed by a Florida licensed surveyor as part of the submittal. At the end of each acceptance section, the Contractor shall submit two (2) signed and sealed surveys.

3. At project completion of all Acceptance Sections, the Contractor shall submit five (5) copies of a signed and sealed survey of the entire project within fifteen (15) calendar days of the completion of dredging activities for Engineer for approval. At a minimum, the project certification survey must include the pre-dredge bathymetric survey, permitted dredging template, and post-dredge bathymetric survey (combining each of the acceptance sections). The payment quantities, within the permitted template, shall be shown on the front cover (summarizing each Acceptance Section) and be sealed by a Florida licensed surveyor as part of the submittal.

J. Pre-Construction Utility Survey

1. The location of utilities provided in Project Drawings (**APPENDIX A**) and in **APPENDIX F** are current as of September 2015. It is the Contractor's responsibility to investigate the location of all utility crossings, via an independent ~~and comprehensive~~ pre-construction utility survey and submit to the Engineer for approval, at least fifteen (7) calendar days prior to any dredging operations. The Contractor shall take precautions against damages which might result from his operations in the vicinity of the utility crossings. **The Contractor assumes all liability for submerged and buried utility facilities. If any utility damage occurs as a result of its operations, the Contractor shall suspend dredging in the area of the damaged utility until the damage is repaired and resumption of the dredging is approved by the Engineer. The District shall not be responsible for the cost of such damage and repairs regardless of cause – including but not limited to any costs associated with interruption of utility services and delay damages**

K. Pre- and Post-Construction Beach Profile Surveys

1. Pre-construction and post-construction surveys shall consist of cross sections taken at locations and intervals (i.e., at the reference monuments coordinates) shown on the Project Drawings. Each cross section shall consist of individual vertical elevations taken along an azimuth of N 70° E. These elevations shall be taken at all changes in slope or grade but not more than 15 feet apart. The cross-section lines shall be spaced not more than 500 ft throughout the project area and shall encompass the entire cross sectional length of the proposed placement area as defined on the Project Drawings. All surveys shall be conducted in compliance with FDEP Monitoring Standards for Beach Erosion Control Projects, Sections 01000 and 01100.
2. Upon completion of the beach fill, the final post-construction survey of all beach material placed within the design template shall be supplied to the Engineer in hard and digital copies. The final post-construction survey shall show the pre- and post-construction grade profiles superimposed on the original drawings both in plan and section views.
3. Surveys shall be completed by a survey firm licensed to work in the State of Florida and experienced in similar bathymetric survey work. All surveys, including partial payment or final surveys, shall be signed and sealed by a licensed Florida Surveyor and submitted to the Engineer for approval. All digital drawings shall be in AutoCAD 2013 or newer format. The data shall also be furnished to the Engineer in ASCII format on compact disc. A sample of the format is shown below:

X	Y	ELEV	DESC
613465.0	1223356.8	14.5	TOB
681364.3	1223287.3	0.12	MHW

4. The beach profile surveys are required to demonstrate that the Contractor has placed all fill material within the boundaries of the authorized fill template; these surveys are not for payment purposes.

1.04 PUMPING OF BILGES

- A. Contractors are warned that pumping oil or bilge water containing oil into navigable waters, or into areas which would permit the oil to flow into such waters, is prohibited by Section 13 of the River and Harbor Act of 1899, approved March 3, 1899 (30 Stat. 1152; 33 U.S.C. 407). Violation of this prohibition is subject to the penalties under the referenced acts.

1.05 UTILITY CROSSINGS

- A. The Contractor shall be responsible for investigating the locations and depths of all utility crossings. Contractor will take precautions against damages which might result from his operations, especially the sinking of dredge spuds and/or anchors into the channel bottom, in the vicinity of underwater utility crossings. If any damage occurs because of his operations, Contractor will be required to suspend dredging until the damage is repaired and approved by the Owner and Engineer. Costs for such repairs and for the downtime of the dredge and attendant equipment shall be at Contractor's expense.

1.06 SIGNAL LIGHTS

- A. The Contractor shall display signal lights and conduct operations in accordance with the General Regulations of the Department of the Army and of the Coast Guard governing lights and day signals to be displayed by towing vessels with tows on which no signals can be displayed, vessels working on wrecks, dredges, and vessels engaged in laying cables or pipe or in submarine or bank protection operations, lights to be displayed on dredge pipe lines, and day signals to be displayed by vessels of more than 65 feet in length moored or anchored in a fairway or channel, and the passing by other vessels of floating plant working in navigable channels, as set forth in Commandant U.S. Coast Guard Instruction M16672.2, Navigation Rules: International-Inland (COMDTINST M16672.2), or 33 CFR 81 Appendix A (International) and 33 CFR 84 through 33 CFR 89 (Inland) as applicable.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.01 GENERAL

- A. Contractor shall dredge within the Limits of Dredging as necessary to complete the Work as defined in the Drawings and Specifications, transport the dredged material to the designated beach placement area, and properly place the material to the grades, lines and cross-sectional templates shown in the Drawings. Contractor will not dredge outside the Limits of Dredging.

B. Work Hours

1. Contractor shall be permitted to work 24 hours per day, seven days a week through May 31, 2017. All materials are to be demobilized from the beach disposal area by May 31, 2017. No extensions will be granted.

C. Access to Work Sites

1. Contractor shall be responsible for providing and maintaining access necessary for his equipment to and from the Work sites. Contractor shall obtain permission and approval of access routes to and from both the dredge site and beach placement area.

D. Weather

1. The project area is subject to windy and rainy weather, including severe electrical storms and other sudden and locally severe meteorological occurrences that approach hurricane conditions, during any time of the year. Contractor shall maintain full-time monitoring of the NOAA marine weather broadcasts, and avail themselves of such other local commercial weather forecasting services as may be available. It shall be Contractor's responsibility to obtain information concerning rain, wind, and wave conditions that could influence his dredging and disposal operations.

E. Noise Control

1. Contractor shall ensure that all possible measures are employed to reduce the amount of noise produced by his operations. Contractor shall conduct his operations to comply with all federal, state and local laws pertaining to noise. Additionally, Contractor shall inform all crewmembers of the need to maintain a professional manner while on the job sites, in radio communications, and in dealing with the public.
2. All hauling and excavating equipment including dredges, dredge/barges, booster pumps, tugs and other support vessels, dozers, loaders, etc. used on this Work shall be equipped with satisfactory mufflers and/or other noise abatement devices.
3. Contractor shall consider the proximity of the dredge plant and beach grading operations to residential areas, especially during evening, night, and early morning hours. Such consideration should include but not be limited to—reducing deck noise, reducing throttle, holding the use of horn and whistle signals to a minimum, and restraining the use of P.A. loudspeaker systems.

F. Light Control

1. Contractor shall ensure that all work lights (as opposed to safety lighting) are shielded to prevent them from shining on residential property.

G. Damage to Property

1. Any damages to private or public property resulting from Contractor's operations shall be repaired and paid for by Contractor.

3.02 WATERBORNE OPERATION

- A. All areas to be dredged shall be in accordance with the attached Project Drawings and shall not exceed the specific areas and depths indicated on those drawings. The Contractor is NOT

authorized to dredge outside of the area depicted. Material excavated shall be transported to and deposited in the beach placement area designated on the Project Drawings. No wetlands or submerged aquatic vegetation outside the project area is to be disturbed as a result of this project construction. **Failure to comply with this condition and all other permit conditions may result in enforcement action. All regulatory enforcement actions, stemming from the project construction, are the strict responsibility of the Contractor.**

B. Bridge-To-Bridge Communication

1. In order that radio communication may be made with passing vessels, all dredges engaged in Work under this Contract shall be equipped with bridge-to-bridge radio telephone equipment. The radio equipment shall operate on a single channel very high frequency (VHF), FM, on a frequency of 156.55 MC per second with low power output having a communication range of approximately ten (10) miles. The frequency has been approved by the Federal Communication Commission (FCC). Channels #13 and #16 must be monitored at all times.

C. Right-of-Way Limits

1. Contractor shall conduct his operations to minimize interference with the movement of vessels in the adjacent waters not being actively dredged. However, the Contractor will be permitted to exclude the public from the work areas including in the immediate vicinity of active dredging operations, along the pipeline route, and at the beach placement area. Enforcement shall be Contractor's responsibility at no additional cost to Owner. The enforcement shall be coordinated with local law enforcement agencies, and will be subject to approval of Engineer.

D. Access

1. The Contractor shall be responsible for providing and maintaining access necessary for his equipment and plant to and from the work site and the discharge site. The Contractor shall ascertain the environmental conditions which can affect the access such as climate, winds, currents, waves, depths, shoaling, and scouring tendencies.

E. Protection of Existing Waterways

1. Contractor shall conduct his operations in such a manner that material or other debris is not pushed outside of dredging limits or otherwise deposited in existing side channels, basins, docking areas, or other areas being utilized by vessels. Contractor will be required to change his method of operations as required to comply with the above requirements. Should any bottom material or other debris be pushed into area described above because of Contractor's operations, the same must be promptly removed by and at the expense of Contractor to the satisfaction of Engineer.

F. Barge and Equipment Anchoring

1. If Contractor's operations require anchoring of barges or other equipment within the work areas, Contractor shall be responsible for assuring that the anchoring technique does not impact or interfere with navigation or damage public or private property. If pilings are used for anchorage, the pilings shall be well marked and removed in their entirety upon completion of Contractor's operation. Contractor shall, at his own expense, repair any damages to private or public property resulting from Contractor's operations.

G. Obstruction of Navigable Waterways

1. Contractor shall promptly recover and remove any material, plant, machinery, or appliance Contractor loses, dumps, throws overboard, sinks, or misplaces, and which, in the opinion of Engineer, may be dangerous to or obstruct navigation. If required by Engineer, Contractor will mark or buoy such obstructions, Engineer may have the obstructions removed by a separate Contract and deduct the cost from any monies due or becoming due to Contractor, or recover the cost under Contractor's bond. Contractor's Liability for the removal of a vessel, wrecked or sunk without fault of negligence is limited to that provided in sections 15, 19, and 29 of the River and Harbor Act of March 3, 1899 (33U.S.C. 410 et seq.)

H. Dredging Operations Adjacent to Property and Structures

1. Structures located within the Limits of Dredging shall be brought to the attention of the Owner and Engineer and a revised dredging plan submitted to Engineer for approval. Any damage to private or public property and structures resulting from Contractor's dredging activities shall be repaired promptly at Contractor's expense. Any damage to structures because of Contractor's negligence will result in suspension of dredging and require prompt repair at Contractor's expense and subject to approval by Engineer as a pre-requisite to the resumption of dredging.

I. Booster Pumps

1. Any booster pumps installed by the Contractor shall be located at least 300 feet from any residential-type building or house. Booster pumps, their prime movers, and any auxiliary equipment shall be fitted or equipped with mufflers, noise control enclosures, or other engineering noise control methods, measures, and features such that steady noise emanating from this equipment does not exceed 85 decibels on the A scale at slow response, and impulsive noise does not exceed 140 decibels. Such items shall be maintained throughout the course of the work.

J. Signal Lights

1. Contractor shall display signal lights and conduct operations in accordance with the regulations of the Coast Guard governing lights and day signals.

K. Pumping Of Bilges

1. Contractors are warned that pumping oil or bilge water containing oil into navigable waters, or into areas which would permit the oil to flow into such waters, is prohibited by Section 13 of the River and Harbor Act of 1899, approved March 3, 1899 (30 Stat. 1152; 33 U.S.C. 407). Violation of this prohibition is subject to the penalties under the referenced acts.

L. Solid Waste Disposal

1. Contractor may encounter solid waste (tires, cans, bottles, fibrous plant material, boards and other debris) within the dredging template that cannot be dredged and/or hydraulically transported to the containment basin. Contractor shall be responsible for the appropriate disposal of such material.

M. Utility Crossings

1. The Contractor shall be responsible for verifying the locations and depths of all utility crossings and take precautions against damages which might result from his operations, especially the sinking of dredge spuds and/or anchors into the channel bottom, in the vicinity of utility crossings. **The Contractor assumes all liability for submerged and buried utility facilities. If any utility damage occurs as a result of its operations, the Contractor shall suspend dredging in the area of the damaged utility until the damage is repaired and resumption of the dredging is approved by the Engineer. The District shall not be responsible for the cost of such damage and repairs regardless of cause – including but not limited to any costs associated with interruption of utility services and delay damages.**

N. Misplaced Equipment and Material

1. Should Contractor, during the progress of the Work, lose, dump, throw overboard, sink, or misplace any equipment or material that may be dangerous to or obstruct navigation, Contractor shall recover and remove the same with the utmost dispatch. Contractor shall give immediate notice, with description and location of such obstructions to Engineer or Engineer's Representative and, when required, shall mark or buoy such the obstruction(s) until the same is removed. Should Contractor refuse, neglect, or delay compliance with these requirements, the obstruction(s) may be removed by Engineer, and the cost of removal may be deducted from any monies due or to become due to Contractor, or may be recovered under Contractor's bond.

O. Historical Period Shipwreck Sites

1. If any shipwreck, artifact, or other objects of antiquity that have scientific or historical value, or are of interest to the public are discovered, located, and/or recovered, Contractor acknowledges that:
2. The site(s), articles, or other materials are the property of the state of Florida, with title vested in the Department of State, Division of Archives, History, and Records Management; and
3. He will immediately notify Engineer of such discovery.

P. Interference with Other Contractors

1. The Owner reserves the right to perform other work in the vicinity of the project area under separate contracts. Contractor shall afford Owner and other contractors reasonable opportunity for the introduction and storage of their materials and execution of their respective work, and shall properly connect and coordinate his work with theirs.
2. If the performance of any contract for the project is likely to be interfered with by the simultaneous execution of some other contract or contracts, Engineer shall decide which contractor shall cease work temporarily and which contractor shall continue, or whether work under the contracts can be coordinated so that the contractors may proceed simultaneously. Owner shall not be responsible for any damages suffered or extra costs incurred by Contractor resulting directly or indirectly from the award or performance or attempted performance of any other contract or contracts on the project or caused by omission of the Engineer respecting the order of precedence in the performance of the contracts other than for an extension of time.

3.03 NOTIFICATION OF COAST GUARD

A. Notice of Intent to Dredge

1. Before beginning Work on this Contract, Contractor shall notify the Commander, Seventh Coast Guard District, of Contractor's intention to dredge and request that it be published in the Local Notice to Mariners. This solicitation shall be given in sufficient time so that it appears in the Notice to Mariners at least two (2) weeks prior to the start of dredging. Contractor shall provide to Engineer appropriate proof of his notification to the Coast Guard and a copy of the relevant Notice to Mariners.

B. Relocation of Navigation Aids

1. Unless expressly stated in the Drawings, Contractor shall not remove, change the location of, obstruct, willfully damage, make fast to, or interfere with any aid to navigation. Navigation aids located within or near the Limits of Dredging will be removed, if necessary, by the U.S. Coast Guard in advance of dredging operations. Contractor shall notify the Commander, Seventh Coast Guard District, Miami, Florida, in writing, with a copy to Engineer, thirty (30) days in advance of the time he plans to dredge adjacent to any aids that require relocation to facilitate dredging. Contractor shall contact the U.S. Coast Guard for information concerning the position to which the aids will be relocated. A copy of the notification shall be provided to Engineer.

C. Dredging Aids

1. Contractor shall obtain, via telephone and fax as expediently as possible, approval from the U.S. Coast Guard for all buoys and dredging aid markers to be placed in the water, and dredging aid markers affixed with a light prior to the installation. Dredging aid markers and lights shall not be colored or placed in a manner that will obstruct or cause confusion with navigation aids.

D. Notice of Misplaced Material

1. Contractor shall immediately notify the U.S. Coast Guard Marine Safety Office of any misplaced material (e.g., dredge pipe, cable, dredged material, etc.) and forward a copy of this notice to Engineer.

3.04 INTRACOASTAL WATERWAY EXCAVATION

A. General

1. Intracoastal Waterway excavation shall be performed using a hydraulic dredge. All excavation shall be performed in accordance the Drawings, Specifications, and approved work plans. Contractor shall confine his excavation operations to the Limits of Dredging but shall excavate the waterway completely to the Limit of Dredging elevation specified in the Drawings.

B. Tolerances

1. A tolerance of 0 inches below and 12 inches ABOVE the specified Limit of Dredging elevation will be allowed.

C. Encountering Rock and Other Unsuitable Materials

1. Although subsurface testing indicates that mostly sand and compacted sand-shell deposits are present in the waterway, rock or other undesirable material (e.g. organic materials and silt) may be encountered during dredging. If such materials are encountered, Contractor shall remove as much sand as possible without disturbing the undesirable materials. Contractor shall record any such encounters with undesirable materials in the daily dredge report and shall include a description of the material and its horizontal and vertical coordinates.

3.05 EQUIPMENT POSITIONING AND CUT DEPTH MONITORING

- A. The Contractor shall have equipment on the dredge that continuously measures the vertical and horizontal location of the cutter head, drag arms, dustpan, or clamshell and is interfaced with the cut depth positioning equipment. The specifications for this equipment, calibration information, and limits of accuracy are to be provided to the Engineer. The Engineer will approve or reject use of specific equipment based on accuracy. Horizontal accuracy for dredge positioning shall be within ± 3 feet. Vertical accuracy for dredge depth positioning shall be within ± 1 foot. (Note: Regardless of the margin for error in horizontal or vertical accuracy of positioning equipment, dredging outside the limits of cutter head activity is absolutely prohibited.) This equipment shall provide a permanent record of the equipment's position referenced to State Plane Coordinates (NAD83, Florida East Zone) and ~~NAVD~~-MLLW datum.
- B. During dredging, reports on the position (x,y) and bottom elevation (z) of the cutter head, drag arms, dustpan, or clamshell shall be provided. This position shall give both horizontal (in State Plane Coordinates, NAD83, Florida East Zone) and vertical (depth corrected for tide in feet referenced to ~~NAVD88 datum~~MLLW) position. The dredge depth (cutter head, drag head, or dustpan) shall be corrected for tidal fluctuations by a method pre-approved and acceptable to the Engineer. The tide measurements must be acquired and applied to the vertical control equipment on a real-time or hourly basis. At a minimum, the report shall give the location at 30 second intervals for cutter head, hopper, clamshell or dustpan dredges. During unloading of hopper dredges and scows, data shall be collected at the time of the beginning of the unloading and immediately prior to departure to the borrow area. The Contractor shall also submit an ASCII file and plot of the horizontal positions of the dredge for each day. The plot shall show the borrow area and dredge area limits, the dredge position, a north arrow and the Florida State Plane grid. The plot shall contain numbered position fixes that correspond to the positions discussed above. The previous day's data shall be provided to the Engineer daily as a part of the Contractor's Daily Quality Control report (see Section 01450 CONTRACTOR QUALITY CONTROL). The location on the dredge of the positioning system antenna and the distance and direction from the positioning system antenna to the bottom of the cutter head, drag arms, dustpan, or clamshell shall be reported on the first Contractor's Daily Quality Control report.

3.06 TRANSPORT OF EXCAVATED MATERIALS

- A. General
 1. All excavated material shall be transported to the designated beach placement area by pipeline. If any material is deposited other than in places designated or approved, Contractor may be required to remove such misplaced material and redeposit it where directed at his expense. To the greatest extent possible, Contractor shall configure his pipelines to allow continuous boat access to navigable waters and public beach access. Contractor shall restrict access to these areas only as required to ensure public safety.
- B. Discharge Pipeline Marking

1. Contractor shall plainly mark the pipeline access routes with conspicuous stakes, targets and/or buoys to be maintained throughout the contract operations. Additionally, Contractor shall clearly label the pipeline every 100 ft with signs reading as follows: DANGER— HIGH PRESSURE DISCHARGE LINE.

C. Pipeline Maintenance and Inspection

1. A tight dredge discharge pipeline shall be maintained at all times to prevent spilling of dredged material or dredge water outside of the beach placement area. The pipeline shall be inspected at least twice daily for leaks. Failure to immediately repair leaks in the discharge pipeline will result in suspension of dredging operations and require prompt repair of pipeline as a prerequisite to the resumption of dredging.

D. Submerged Pipeline

1. In the event Contractor elects to submerge his pipeline, the pipeline shall rest on the bottom, and the top of the submerged pipeline and any anchor securing the submerged pipeline shall be no higher than the project depth for any navigation channel in which the submerged pipeline is placed. Should Contractor elect to use a pipeline material that is buoyant or semi-buoyant, such as PVC pipe or similar low-density materials, Contractor shall securely anchor the pipeline to prevent pipeline from lifting off the bottom under any conditions. Contractor shall make daily ~~underwater~~ inspections of the submerged pipeline to ensure buoyancy has not loosened the anchors. Contractor shall remove all anchors when the submerged pipeline is removed. The location of the entire length of submerged pipeline shall be marked with signs, buoys, lights, and flags conforming to U.S. Coast Guard regulations.

E. Floating Pipeline

1. Should Contractor's pipeline not rest at the bottom, it will be considered a floating pipeline and shall be visible on the surface and clearly marked. In no case will Contractor's pipeline be allowed to fluctuate between the surface and the bottom, or lie partly submerged. Lights shall be installed on the floating pipeline as required in paragraph SIGNAL LIGHTS below. The lights shall be supported either by buoys or by temporary piling, provided by Contractor and approved by Engineer. Where the pipeline does not cross a navigable channel, the flashing yellow all-around lights shall be spaced not over 200 feet apart, unless closer spacing is required by U.S. Coast Guard personnel, in which case the requirements of the U.S. Coast Guard shall govern, at no additional cost to the Owner.

F. Land-based Pipeline

1. Land-based pipeline shall be placed as far landward as possible without compromising the integrity of the dune system or existing vegetation. Contractor shall construct crossing ramps over the pipeline at 500-foot intervals along the length of the beach placement area to provide pedestrian access to the water. Additional ramps shall be provided at or near all dune walkovers, both public and private. The ramps may be constructed of sand and shall be clearly marked with stakes, survey flagging, etc. The Contractor shall also construct a temporary ADA-accessible ramp over the wood boardwalk at the inlet's south jetty as the pipe crosses this area. Ramps shall be maintained in good condition at all times during the project.

3.07 BEACH FILL PLACEMENT

A. General

1. The excavated material shall be placed and graded as necessary to conform to the lines, elevations, grades, and cross sections of the beach placement area as shown in the Drawings. Contractor shall commence beach fill operations at the northern end of the designated beach placement area and proceed to the south constructing the full cross sectional template as the Work progresses. Contractor shall control discharge through construction and maintenance of a longitudinal dike approximately 100 – 200 ft in length. In the event that the material excavated from the sand trap is not of sufficient quantity to complete the nourishment design, Contractor shall construct the design taper shown in the Drawings at the southern terminus of the completed fill.
- B. Staging Area
1. A construction staging area, shown on the Drawings, will be provided for Contractor's use. Other staging areas may be used only with permission and approval of Owner and Engineer.
- C. Tolerances
1. A tolerance of 6 inches above and below the prescribed berm grade, slopes, and cross section dimensions above the wave zone will be permitted.
- D. Contractor's Ingress and Egress
1. Entry and exit of Contractor's personnel and equipment to beach placement area shall be made only at the location specifically designated on the Drawings.
- E. Beach Placement Area Safety Officer
1. Contractor shall place a safety officer at the beach placement area who shall be present on site at all times during active dredging operations and/or when material or water is being discharged at the beach site. Contractor's safety officer shall maintain constant radio or telephone communication with the dredge, and shall possess the authority to shut down the dredge if conditions warrant. Contractor's safety officer shall be responsible for providing and maintaining public safety at the beach placement area and for complying with all local, state, or federal regulations concerning public safety.
- F. Pipeline Discharge
1. Contractor shall maintain a tight discharge pipeline for the pumpout operations at all times. The joints shall be so constructed as to preclude spillage and leakage. The pipeline corridor shall be visually inspected by the Contractor daily during the period of active pumpout operations. All occurrences shall be indicated in the Contractor's Quality Report. The development of a leak shall be promptly repaired or the pumpout operations shall be shut down until complete repair has been made to the satisfaction of the engineer.
- G. Pedestrian Traffic Control
1. Contractor shall prevent public access to the discharge point of the pipeline. Contractor shall be required to maintain barricades, warning signals, and flagmen to ensure public safety in the vicinity of the pipe discharge at all times during beach fill operations. Additionally, Contractor shall erect clearly visible signs at the dredge discharge point that read as follows: DANGER: HIGH PRESSURE DISCHARGE. The signs shall be maintained in good condition at all times throughout the project. Should control of pedestrian traffic at the beach placement area become problematic, Contractor shall contact Palm Beach County Sheriff's Office and request assistance. Contractor shall also inform Engineer if such action becomes necessary.

- H. Beach Lighting
 - 1. During the period of March 1 through October 31, only shielded low-pressure sodium vapor lights shall be used for beach placement area and offshore equipment lighting to minimize impacts on sea turtle nesting activities. Notwithstanding this constraint, lighting shall meet all local, state, OSHA, and Coast Guard safety requirements.
- I. Vegetation Surrounding Beach Fill Placement Area
 - 1. The Contractor shall not damage the vegetation existing around the beach fill placement area. Booster pumps, pipeline, and equipment shall not be placed or operated on vegetated areas.
- J. Dressing for Final Acceptance
 - 1. Immediately upon the completion of beach placement and removal of equipment and materials from the beach fill area, the final dressing shall be accomplished by the Contractor for final acceptance. This final dressing is a requirement as a part of the post-construction cleanup and prior to the sand compaction measurements required by the subparagraph "Beach Tilling" of Section 01 35 43 ENVIRONMENTAL PROTECTION.

3.08 SURVEYS

- A. Pre-Construction Surveys
 - 1. Morgan & Eklund, Inc., completed a March 2014 examination survey of the project area entitled *Hydrographic Survey Intracoastal Waterway St. Lucie County for Florida Inland Navigation District*. Project No. 5303.10 (**APPENDIX E**). The contours shown on the Project Drawings represent the bathymetric conditions existing at the time of the survey.
 - 2. Morgan & Eklund, Inc., completed a November 2016 beach profile survey of the beach placement area entitled *Topographic and Bathymetric Survey Post-Matthew Monitoring Profiles Fort Pierce Beach Restoration Project*, Commission No. 5304.28 (**APPENDIX E**). The contours shown on the Project Drawings represent the beach conditions existing at the time of the survey.
 - 3. At the time of construction, actual conditions at the project sites may vary significantly. Since the Contractor will be paid for quantity of material removed from the project area, the Contractor shall perform a new pre-construction bathymetric survey of the project area. When approved by the Engineer, this survey will be used as the pre-dredge survey for payment quantity calculations. Refer to SECTION 01 78 00 PROJECT CLOSEOUT.
- B. Post-Construction Surveys
 - 1. Within 7 days of the completion of construction activities within an acceptance section, the Contractor shall perform the post-construction bathymetric survey (by equivalent methods and density to the pre-construction bathymetric survey). Upon submittal to the Engineer, the surveys shall be reviewed for accuracy, completeness, and to calculate payment quantities relative to the pre-dredge survey or progress payment surveys. At the project completion and for final project certification, the Contractor shall submit three copies of a signed and sealed survey of the entire project. Refer to SECTION 01 78 00 PROJECT CLOSEOUT.
 - 2. Pre- and post-construction beach profile surveys are required as specified in Section 1.3.J.

3. Volume calculations for payment shall be calculated with 3H:1V side slopes extending upward from the maximum dredge elevation template shown in the Construction Drawings. The volume calculation methodology will determine the volumetric difference between the pre-dredge surface and post-dredge surface as calculated in AutoCAD Civil 3D format (AutoCAD2013).
4. Format
 - a. Contractor shall provide the Engineer the digital data from the Pre-Dredge Survey necessary to compile a pre-dredging digital surface in AutoCAD Civil 3D format. All surveys, both hardcopy and digital, must reflect actual sounding data collected in the field. The Contractor will provide the Engineer the digital surface files (Land XML and ASCII XYZ formats) developed for the purpose of volume calculations in AutoCAD Civil 3D format. The Contractor shall present all survey data on scaled drawings comparable to the construction drawings. The drawings shall be provided in electronic format in Adobe PDF files and a CAD format compatible with AutoCAD2013. The Engineer may request up to five sets of hardcopy drawings. All survey data shall be referenced to the horizontal projection NAD83, Florida East, ft, and the vertical datum MLLW in ft. In addition, the pre- and post-construction beach profile surveys methods and deliverables shall conform to the March 2004 (or later) update of the Bureau of Beaches and Coastal Systems *Monitoring Standards for Beach Erosion Control Projects, Sections 01000 and 01100*.

3.09 FINAL EXAMINATION AND ACCEPTANCE

A. Final Examination of Work

1. As soon as practicable as and no later than one (1) week after receipt of the post-dredge bathymetric surveys, the Engineer will review the surveys and/or examine the Work sites. Methods of examination, may include but are not limited to review of survey data and additional survey soundings or sweeping. Should any lumps or other lack of depth be disclosed by this examination, the Contractor will be required to remove by dredging. Contractor or his authorized representative will be notified when the examination is to be made and will be permitted to accompany the survey party. When the area is found to be in a satisfactory condition, it will be accepted.
2. The Owner reserves the right to conduct an independent survey. Any discrepancies between the Contractor and Owners surveys will be in favor of the Owner.
3. Should more than two examinations by Engineer over an area be necessary by reason of work for the removal of lack of depth disclosed at a prior examination, the cost of such third and any subsequent soundings or sweeping operations will be charged against Contractor at the rate of \$5,000 per day for each day in which the examination survey crew is engaged in sounding and/or is en route to or from the site or held at or near the site for such operation.

B. Final Acceptance

1. Final acceptance of the whole or a part of the work and the deductions or corrections of deductions made thereon will not be reopened after having once been made, except on evidence of collusion, fraud or obvious error, and the acceptance of a completed section shall not change the time of payment of the retained percentages of the whole or any part of the work.

3.10 FINAL CLEANUP

- A. Final cleanup shall include the removal of all Contractor's plant, equipment, and materials for either disposal or reuse. All such disposal shall be in a manner and at locations approved by the Owner and Engineer. Contractor shall not be permitted to abandon equipment or materials in any area within or adjacent to the project sites, including the dredging area and the beach placement area.

-END OF SECTION-