ITEM 203.06010010 – DREDGING BORROW

DESCRIPTION

Under this item the Contractor shall mobilize and demobilize equipment in order to dredge suitable material from within the established limits of the borrow area and place in the designated fill area in accordance with the plans and specifications and as directed by the Engineer. The Contractor shall also conduct pre dredge and post dredge borrow area bathymetric surveys.

MATERIALS

The material to be used is sand.

A sufficient quantity of material suitable for the beach fill is available from the Fire Island Inlet Channel and Deposition Basin as shown on the plans.

All material shall be dredged from within these areas. In the event any portion of the borrow areas yields material unsuitable for use on the beach, the Engineer, may direct that the depth of excavation be changed or that the excavating equipment be moved to other portions of the borrow areas that will yield suitable material. Under no circumstances shall material be obtained from outside the established limits of the borrow areas. Should it be determined that an area outside the limits of the designated borrow areas was used for borrow, the Contractor shall restore such areas to the original condition. Borrow area limits are shown on the plans and the NYSDEC permit.

The character of materials is assumed to be suitable sand for dune replacement. If rock, rubble, or any other debris is encountered during dredging, the Contractor shall immediately cease operations and relocate to another section of the borrow areas. He shall report the encounter with the rock, rubble or any other debris on the quality control form and immediately notify the Engineer, verbally, providing location in Long Island Lambert coordinates of the area of rock, rubble or any other debris. Rock, rubble, or any debris larger than two (2) inches in diameter which is excavated and placed on the beach will be removed by the Contractor, at his own cost.

The Contractor shall obtain grab samples of the placed fill from: the beach backshore; edge of berm; Mean High Water (MHW); and Mean Low Water (MLW). One set of samples shall be taken every 200 feet along the placed fill area. A grain size analysis of each sand sample will be made using sieve sizes comparable to the unified soil classification system ASTM D248-7 and the results plotted on an appropriate curve format. The laboratory analysis results and plotted grain size distribution curves shall be furnished with the Daily Construction Quality Reports.

CONSTRUCTION DETAILS

Submittals
The Contractor shall submit the following prior to performing any work:

Contractor survey if site conditions differ from the plans.

The Contractor shall submit for approval, to the Engineer, his plan for the development of any contractor-furnished placement areas or any modification to the State furnished placement area.
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This plan shall show areas or portions thereof to be used. The plan shall also show the manner in which the dredged material will be distributed in the specific areas. Such plans shall be provided by the contractor for approval by the Engineer. If the plan is not accepted, the Contractor is to perform the work in accordance with the specifications.

The following shall be submitted in accordance with Section 105-16 Shop Drawing Approval of the Standard Specifications:

Shop Drawings including Submerged Pipeline, Soundings or Sweeping, Indicate pipeline location and installation details.

Quality Control

a. The Contractor shall establish and maintain quality control for material placement to assure compliance with contract requirements, and maintain records of his quality control for all construction operations, including but not limited to the following:

   1) Dredging, including suitability of dredged material and manipulation and control of the dredge discharge.

   2) Placement of sand fill material, including continuity and order of placement; distribution of material and measures used to control loss of material.

b. The Contractor will have a "NOTICE TO MARINERS" published by the Coast Guard 15 days prior to the start of work.

c. Placement Plan: The Contractor shall submit for approval his placement plan to the Engineer. The placement plan shall include the particular site(s) to be utilized, all special conditions (i.e., NYSDEC, etc.) specific to sites(s) being used, contractor access to the site(s) locations and cross-section of existing and proposed dikes, maximum elevations and quantities of placement material for each site, weir and drainage structure locations, manner in which the dredged material will be distributed in the areas, etc. Approval of the placement plan by the Engineer is required prior to placement site(s) preparation. The Contractor shall conduct his work in accordance with the Placement Plan, however, approval of the plan for development of the placement area does not in any manner relieve the Contractor of his responsibility for the adequacy of the design and construction and drainage facilities required. In addition, the Contractor shall also submit at the pre-construction meeting, his plan for road crossings of the discharge pipeline. The contractor shall be responsible for securing the appropriate permits for any road crossings of discharge pipeline or similar activities and may not begin work until such permits are received from the appropriate agencies.

d. Pre-Construction Site Visit: Prior to actual construction of any placement site, the Contractor and the Engineer shall visit the site(s) for the purpose of delineating areas of access avoidance (cultural resource and/or wetland concerns).

e. Construction/Maintenance of Containment Structure. The Contractor shall construct all retaining dikes, waste weirs and drainage structures as are necessary for confining the dredged
material and for controlling placement area effluent until acceptance of all work under the contract.

f. Protection of Structures and Adjacent Areas. The Contractor shall be responsible for the maintenance, repair and stability of all dikes, roads and structures, used by him under the contract. The Contractor shall restore all dikes, roads, and areas he disturbs through his operations to a satisfactory condition, as approved by the Engineer, at no additional cost to the State.

g. Inspection of Structures and Adjacent Areas. The Contractor shall inspect all dikes, roads, waste weirs, and adjacent areas utilized during this operation on a daily basis to assure their safety and stability. The Contractor shall include these inspections in his daily quality control report. The inspection shall include but not be limited to structures, equipment, safety, security, drainage and seepage.

h. Reporting Requirements. The Contractor shall maintain a daily written record of all placement site operations. This requirement shall be made a part of the Contractor's Quality Control Plan and each record shall be included in the Contractor's Quality Control Report.

i. Containment Structure Restoration. The Contractor shall restore any feature of any containment structures as required to prevent the escape of dredged material from the placement site on to adjacent areas.

j. Control of Placement Area Effluent. The contractor shall monitor and control placement area conditions and placement effluent quality as prescribed in these specifications. The Contractor's Quality Control Plan shall identify monitoring requirements and measures, which will be taken to control placement area conditions to insure effluent quality meets all permit requirements.

k. New York State Water Quality Certifications. The Contractor shall comply with all requirements identified in the NYSDEC Water Quality Certificate (WQC) including all special conditions

l. Removal of Containment Area Structures. Any structures (i.e., weirs, pipeline, etc.) installed by the Contractor for use in his placement operations shall be removed and the contractor shall repair and stabilize all areas affected by the removal of these structures as approved by the Engineer.

**Reporting Requirements**


The Contractor will, on US Army Corps of Engineers Form 4267, be required to prepare and maintain a daily report of operations and inspections and furnish copies thereof to the Engineer. Further instructions on the preparation of the report will be furnished by the Engineer. Attached to the form, the Contractor shall submit a plan of the borrow area indicating the location, depth and extent of his dredging operations for that day.

b. Hopper Dredge Operation
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When a hopper dredge operation is used, the Contractor will submit daily records of hopper loads, including tonnages of empty and fully loaded conditions prior to pump-out. For all types of dredge operations the Contractor will furnish production meter records (using properly calibrated instruments) of suction line densities and pipeline velocities. Production meter records and loadmeter records must be cataloged either by time of day or load number.

Placement of Sand Fill

a. Placement

The material dredged from the designated borrow areas shall be placed on the beach fill areas to the specified limits and cross sections shown on the drawings, provided, however, that the provisions of subparagraph g. below shall be controlling with respect to the limits and sections as shown on the plans. The material shall be deposited as evenly as practicable by the hydraulic method to form a comparatively smooth and uniform beach surface.

b. Material Placed Elsewhere

Any material that is placed elsewhere than in places designated or approved by the Engineer, will not be paid for, and the Contractor may be required to remove such material, and placed it where directed, at his own expense.

c. Dredge Material

Dredge material shall be pumped directly from the dredging vessel to the beach placement area. No bottom placement and re-handling will be allowed. Dredge discharge shall be manipulated and controlled by the Contractor in such a manner that a minimum of shaping by mechanical equipment will be required and a minimum amount of material will be lost.

d. Floatable Material

All floatable material excavated, including, without limitation, wood and tires, shall be disposed of at an existing upland disposal area proposed by the Contractor and approved by the Engineer. Should the Contractor encounter floatable material, a copy of a letter granting the permission of appropriate authorities to use an existing approved upland disposal area shall be submitted to the Engineer.

e. Final Beach Berm

The final beach berm of placed fill shall be shaped as shown on plans by bulldozing or other approved means as required, to provide the design beach sections shown on the drawings.

f. Design Section

If the design section cannot be achieved at the toe of the section, the Contractor shall submit an alternative section to the Engineer for approval.

g. Placement of Dredged Material
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Placement of dredged material on the designated beach fill area shall be subject to the following conditions:

(1) Any discharge pipeline crossing navigation channels must be submerged so that sufficient depth for navigation exists.

(2) Such discharge pipeline must be marked by signs, lights or other devices to insure safety to navigation by day and by night. All of these devices shall be in complete accordance with Coast Guard regulations. The Contractor shall provide a plan of pipeline markings to the Engineer.

(3) The discharge pipeline shall be arranged as approved by the Engineer.

(4) A dike shall be constructed at the inshore limit of fill to prevent the dredge effluent from extending beyond the contract limits.

(5) Tracked vehicles shall be operated on the fill in such manner so that they do not cause excessive gouging.

(6) In order to provide access for pedestrians across the pipeline in beach use areas within the contract limits, the pipeline shall be ramped with sand over the top elevation of the pipe at pedestrian access ways or at 500-foot intervals. Width of the ramps shall be 10 feet. The Contractor may provide another method of maintaining pedestrian thoroughfare across the pipeline upon approval by the Engineer. Pedestrian thoroughfare shall be maintained for the duration of the contract. Also, in order to provide for the safety of persons using the beach, the following authority shall be contacted by the Contractor to restrict appropriate beach areas: NYS Department of Transportation, Department of Parks and Suffolk County, Town of Babylon and Nassau County, Town of Oyster Bay.

During all pumping operations, the Contractor shall provide personnel to maintain visual control at the end of the discharge line. Radio contact shall also be provided by the Contractor to enable such personnel to halt dredging in case of emergency.

(7) The Contractor may be directed to move to another location within the Borrow Area if undesirable material begins to be pumped onto the beach (i.e. silt).

(8) The area where filling operations are in progress shall be floodlighted during the hours of darkness. Illumination shall be provided by using portable light equipment. A minimum of 3-foot candles of illumination shall be maintained in the immediate vicinity of the pipe discharge.

(9) Monitoring the discharge operation by radio communication from the discharge location to the leverman during all pumping operations is required.

(10) During all pumping operations, the Contractor shall provide personnel to maintain visual control of the end of the discharge line. Telecommunications contact shall also be provided by the Contractor to enable such personnel to halt dredging in case of emergencies or undesirable material placement as directed by the Engineer.
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(11) A temporary dike shall be constructed at the inshore limit of the fill to prevent the dredging effluent from extending beyond the contract limits.

(12) The Contractor shall obtain grab samples of placed fill from: the beach back-shore; edge of berm; mean high water (MHW); and mean low water (MLW). One set of samples shall be taken every 200 feet along the placed fill area. A grain size analysis of each sand sample will be made using sieve sizes comparable to the unified soil classification system ASTM D248-7.

Plant

The Contractor agrees to keep on the job sufficient plant to meet the requirements of the work. The plant shall be in a satisfactory operating condition and capable of safely and efficiently performing the work as set forth in the specifications. The plant shall be subject to the inspection of the Engineer at all times. No reduction in the capacity of the plant employed on the work shall be made except by written permission of the Engineer. The measure of the "capacity of the plant" shall be its actual performance on the work to which these specifications apply.

a. Scows

All scows must be kept in good condition, the coamings repaired and the pockets provided with proper doors or appliances to prevent leakage of material.

b. Hydraulic Pipelines

All pipelines for hydraulic dredging Plant must be kept in good condition at all times and any leaks or breaks along their length shall be promptly repaired. All breaks in any pipeline shall be reported on the Contractor's Daily Quality Control Report for the date the break occurred. An estimation of the duration of the break and the quantity of misplaced material shall be provided in the report.

c. Marking of Floating Dredge Pipelines

The Contractor shall be required to mark floating dredge pipelines in accordance with the requirements of 88.15 of Annex V of U.S. Navigation Rules, inland, COMDTINST M 16672.2A, dated 23 December 1983. Dredge pipelines that are floating or supported on trestles shall display one row of yellow lights, visible all around the horizon for at least 2 miles on a clear, dark night. The lights shall flash at 50 or 70 times per minute and be places not less than 10 feet to 16 feet above the water. The lights shall be sufficient in number to clearly show the length and course of the pipeline.

d. Dredge Pipelines Crossing Navigable Channels

The arrangement of any pipeline crossing a navigable channel shall be approved by the Engineer. Where the pipeline crosses a navigable channel the spacing of the lights shall not be more than 33 feet apart. Two red lights, visible all around the horizon for at least 2 miles on a clear, dark night, shall be displayed at each end of the pipeline, including the ends in a channel where the pipeline is separated to allow vessels to pass (whether open or closed). The lights shall be 3.3
feet apart in a vertical line with the lower light at the same height above the water as the flashing yellow light.

e. Submerged Pipelines

Any discharge pipeline submerged to cross a navigation channel shall be submerged so that sufficient depth for navigation exists. Such discharge pipeline shall be marked by signs, lights or other devices to insure safety to navigation by day and by night. All of these devices shall be in complete accordance with Coast Guard regulations.

f. Road Crossings

A detailed plan of the pipeline route to be used by the Contractor shall be submitted prior to laying of the pipeline. A ramp over any discharge pipeline crossing any roadways at the project site(s) shall be provided. Additionally, adequate signs (caution and stop, if necessary), and flashing warning lights, shall be provided by the contractor to ensure safety to vehicles and their occupants using the roadway. Under no circumstances shall any portion of the paved portion of any roadway be disturbed. If the roadway is disturbed, the Contractor shall provide an adequate base to allow traffic to pass over the pipeline, and repairs to the roadway after completion of the project area, such that the roadway is restored to a condition equal to or better than the condition prior to disturbance. In addition, prior to placement of the pipeline across any roadway, the Contractor shall contact personnel at the appropriate municipality to determine if the warning signs and lights are adequate for safety purposes.

g. Interference with Navigation

Minimize interference with the use of channels and passages. The Engineer will direct the shifting or moving of dredges or the interruption of dredging operations to accommodate the movement of vessels and floating equipment, if necessary.

h. Compensation for Interruption of Operations

If dredging operations are interrupted due to the movement of vessels or floating equipment, an adjustment in the contract price or time for completion, or both, will be made as provided by the contract.

Dredge Location Control

The Contractor is required to have electronic positioning equipment that will accurately compute and plot the position of the dredge. Whenever dredging operations are underway, the location of the dredge shall be continuously monitored and the dredge location, in the project datum, shall be recorded at intervals not to exceed one (1) minute. Such records, and an accurate map showing actual dredging locations, shall be furnished to the Engineer daily as part of the Quality Control Reports. The electronic positioning equipment shall be installed on the dredge so as to monitor, as closely as possible, the actual location of the cutter head or diagram. This equipment shall be continuously accessible by the Engineer on board the dredge, who must be able to verify equipment calibration at any time. The electronic positioning equipment shall be required to be calibrated monthly, maintained and operated so that the maximum error for the coordinates
recorded do not exceed 3 feet. The location on the dredge of the master antenna and the distance and direction from the master antenna to the cutterhead shall be reported on the Quality Control Reports. No dredging will take place outside the borrow area limits as shown on the drawings. Dredging outside of the borrow area limits will result in immediate shutdown of work. The Contractor's methods of location of the dredge shall be submitted with the quality control plan. Information to be submitted shall include a written description of the equipment, including applicable manufacturer’s brochure and data, and previous jobs on which the equipment has been used.

Dredging Depth Monitoring Equipment

The Contractor shall have in continuous operation whenever dredging operations are underway, electronic equipment which measures the cutterhead depth. The depth measuring device (as approved by the Engineer) shall be used and interfaced with the electronic positioning equipment required in this Section. The depth measuring device shall be calibrated by a bar check daily. This equipment shall be accessible to the Engineer, who shall be able to verify calibration.

Buoy Removal

The Contractor shall notify the Coast Guard at least 15 days prior to the date desired for having buoys removed or relocated which interfere with dredging operations.

Temporary Fences

a. Land Booster Pumps

If land booster pumps are used, a temporary protective stock mesh wire fence shall be installed by the Contractor around the booster facility. The fence shall be removed by the Contractor at the completion of the work or when directed by the Engineer and all material used shall remain property of the contractor.

b. Beach Access Ramps

Beach access ramps and stairs to the work areas will be closed by the contractor by erection of a wire mesh snow fence. These features will be identified during the on-site pre-construction meeting between the State, the contractor and local interests.

c. Removal of Temporary Fencing

Upon completion of work in each work area the temporary fencing as shall be removed as specified in this Section.

The cost for temporary fencing shall be included under the appropriate items of work.

Other

a. Artificial Obstructions
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Except as indicated, the State has no knowledge of cables, pipes, or other artificial obstructions or of any wrecks, wreckage, or other material that would necessitate the use of explosives or the employment of additional equipment for economical removal. If actual conditions differ from those stated or shown, Contractor shall inform the Engineer.

b. Soundings

Contractor is to perform a pre-dredge survey within 2 weeks prior to commencing any dredging; a post-dredge survey is to be completed within 2 weeks of completing all dredging operations. These soundings or bathymetric surveys are to be performed by a licensed NYS Surveyor, and are to be submitted to the Engineer for approval. The pre-dredge soundings are to determine quantities available. Post dredge soundings are to determine compliance with borrow area limits. Dredging in the borrow areas will be allowed to the depths indicated on the plans and permits. These bathymetric surveys are to be paid under Item 625.01.

c. Slopes

The dredge cuts in the borrow area shall not have side slopes steeper than 1 on 3. Borrow area entrance and exit slopes shall not be steeper than 1 on 5.

METHOD OF MEASUREMENT

This item will be measured on a lump sum basis. Sixty percent (60%) of this item shall be paid when all dredging equipment is mobilized and on site as approved by the Engineer. Forty percent (40%) of this item shall be paid when all dredging equipment is demobilized and properly removed from the site as approved by the Engineer.

All other work involved in dredging, pumping, placing and shaping of the borrow material to line and grade at locations shown in the plans is to be paid under item 203.03 – Embankment in Place, on a cubic yard basis.

BASIS OF PAYMENT

The lump sum price bid shall include the cost of mobilization and demobilization of equipment related to the dredging operation and the cost of furnishing all labor, materials and equipment necessary to satisfactorily complete the work.