PART 1 - GENERAL

1.1 General Description

.1 This section specifies requirements for excavating Class "B" underwater materials at the harbour of the wharf at Loggiecroft, Kent County, NB and for transporting and disposing of excavated materials on land at the new containment cell at Loggiecroft wharf.

.2 The harbour dredge depth is 1.50 metres below Chart Datum, or rock if encountered first. The disposal site is approximately 150m from the dredge site.

.3 The approximate volume above grade based on the pre-dredge survey August 18 2017 is 11,000 cubic metres place measure. This is an estimate only for the purposes of planning for environmental permits. This contract does NOT pay by volume.

1.2 Related Sections

.1 Section 01 35 44 - Environmental Procedures
Section 01 35 29 - Health and Safety

1.3 Measurement Procedures

.1 Only material excavated above grade plane and within dredge limits indicated or specified will be measured.
.1 Moving off the channel to accommodate fishing vessels is incidental to the work, and will not be measured.
.2 Any remediation to prevent the possible transport of alien species from port to port will be included in the demobilization costs. See Environmental Procedures Section 01 35 43.

.2 Square **metres (SQM):** Harbour Dredging will be measured by the square metre over the area of work completed to the specified cut. Side slopes are not measured for payment, but in the calculation of the area to dredge it must be considered that the side slope will either be shaped or will fall to about two horizontal to one vertical. The Square metre area will be calculated by using AREA command of AutoCAD of

1.3 Measurement Procedures (Cont'd)

.2 Square metres (SQM):(Cont'd)
a polygon within the dredge limits forming the contour line of the dredge depth, minus any areas within the polygon not to grade. The dredge depth is -1.5 m,. In areas where rock is proved, the dredge depth is to rock elevation.

.3 Payment of harbour dredging will include disposal of dredge material at the existing disposal cell indicated on the drawings.

.4 Dredging equipment used for removal of obstructions will be paid for at rate negotiated in advance and authorized in writing by Departmental Representative.

.5 All operations in connection with field positioning of dredging equipment will not be measured separately for payment.

.6 No separate payment will be made for Contractor's survey vessel, equipment and crew or diving services.

.7 There will be no additional payment for delays incurred during fishing seasons, weather, during periods when no dredging is permitted.

.8 There will be no additional payment for downtime and for delays caused by vessel traffic.

.9 Removal of infilling material will not be measured for payment.

.10 There will be no additional payment for any accumulation of sea weeds and/or kelp which may hamper the dredging operation.

.11 There will be no additional payment for mooring facilities fees for dredge plant.

1.4 Definitions

.1 Dredging: excavating, transporting and disposing of underwater materials.

.2 Class A material: solid rock requiring drilling and blasting to loosen, and boulders

1.4 Definitions (Cont'd)

.2 Class A material:(Cont'd)
or rock fragments of individual volumes 1.5 m^3 or more.

.3 Class B material: loose or shale rock, silt, sand, quick sand, mud, shingle, gravel, clay, sand, gumbo, boulders, hardpan and debris of individual volumes less than 1.5 m^3.

.4 Obstructions: material other than class A, having individual volumes of 1.5 m^3 or more.

.5 SQM, Area, in square metres, projected horizontal.

.6 Debris: pieces of wood, wire rope, scrap steel, pieces of concrete and other waste materials.

.7 Grade: plane above which material is to be dredged.

.8 Estimated quantity:
.1 Volume of material calculated above grade within dredge limits and within specified side slopes unless otherwise specified.
.2 Areas in square metres of material calculated horizontally above grade and within dredge limits, not including side slopes.

.9 Side slope: inclined surface or plane from grade at side limit of dredging area to intersect original ground line outside of side limit and to be expressed as ratio of horizontal to vertical.

.10 Chart Datum: permanently established plane from which soundings or tide heights are referenced, usually Lowest Normal Tide (L.N.T.).

.11 Coordinates:
.1 U.T.M.: universal transverse mercator projection..

.12 Minimum Mode: mode of operation of hydrographic survey equipment where minimum sounding over length of travel between position updates will be retained in memory. Soundings taken in this mode may be shallower

1.4 Definitions (Cont'd)

.12 Minimum Mode:(Cont'd) than actual bottom elevations due to variations in water depths due to wave action.

.13 Matrix Block: each dredge area is presented as number of 1.2 x 3.0 m long blocks. Dependent on position of sounding, block may have 0 to 4 soundings contained within it.

.14 Least of Minimum Plan: hydrographic survey plan in which least sounding in grouping of matrix blocks is plotted.

.15 Instanteous Mode: mode of operation of hydrographic survey equipment where only sounding observed at predetermined distance interval is retained in memory.

.16 Average of Instanteous Plan: hydrographic survey plan in which average sounding in appropriate grouping of matrix blocks is plotted.

.17 Lowest Normal Tide (L.N.T.): plane so low that tide will seldom fall below it.

.18 Cleared Area: area of dredging accepted as complying with plans and specifications.

1.5 Regulatory Requirements

.1 Mark floating equipment with lights in accordance with Regulations for the Prevention of Collisions.

1.6 Waste Management and Disposal

.1 Metals, wood and recyclable materials removed during the dredging activities must be diverted appropriate recycling facilities.

1.7 Interference to Navigation and Fishing

.1 Be familiar with vessel movements and fishery activities in area affected by dredging operations. Plan and execute Work in manner that will not interfere with fishing operations, marina operations, construction activities at wharf sites, or access to wharves by land or water.

1.7 Interference to Navigation and Fishing (Cont'd)

.2 Engineer will not be responsible for loss of time, equipment, material or any other cost related to interference with moored vessels in harbour or due to other Contractor's operations.

.3 Keep District Manager, Canadian Coast Guard, Fisheries and Oceans, informed of dredging operations in order that necessary Notices to Mariners will be issued.

.4 Become familiar with fishery activity. Clearly mark dredging area(s), disposal area(s) and routes to and from dredging and disposal area, during periods when fishing gear is set in areas adjacent to dredging operations with "Cautionary Buoys", in accordance with Coast Guard Standard TP968-1984. All Buoys must be colored cautionary yellow - CGSB #505-108. The Contractor is responsible for all costs associated with the supply, installation and removal of all necessary temporary aids.

.5 Execute the work to ensure damage does not occur to fishing gear and interference to fishing operations is minimized, by conducting operations within the areas so marked.

.6 Be responsible for damage to fishing gear from dredging activities outside marked areas and, if damage occurs, assume responsibility for replacement or repair costs and cost of lost fishing opportunity.

1.8 Datum, Water Gauges and Targets

.1 Elevations used in this specification and contract drawings are in metres referred to Chart Datum.

.2 Areas to be dredged are to be referenced to vertical bench marks for each location of dredging as indicated.

1.9 Floating Plant

.1 Dredges or other floating plants to be employed on this Work, to be of Canadian registry, make or manufacture, or, must receive certificate of qualification from

1.9 Floating Plant (Cont'd)

.1 (Cont'd)
Industry Canada, Marine Directorate. Submit this certificate with equipment information.

.2 Requests for certification in format of attached questionnaire to be directed to Senior Director, Marine, Energy and Marine Branch, Marine Directorate, Industry Canada, 235 Queen Street, Ottawa, Ontario, K1A 0H5, and to be received there not less than 14 days prior to tender closing.

.3 The Contractor shall determine the equipment required to dredge the material specified. The material to be dredged is as described in Paragraph 1.1 of this Section.

1.10 Inspection of Site

.1 Contractor to visit site of Work and become thoroughly familiar with extent and nature of Work and conditions affecting Work before tendering.

1.11 Site Information

.1 Take necessary steps to become fully familiar with potential inclement weather and sea conditions in this area.

1.12 Survey Requirements

.1 The Contractor shall provide, at his expense, a survey vessel for equipment and crew to set up and maintain control for the location of dredge limits and to sound areas, immediately after dredging, to verify that grade depth has been attained.

1.13 Surveys and Acceptance of Work

.1 No area will be dredged prior to Departmental Representative's and Contractor's mutual acceptance of pre-dredge survey for that area.

.2 Post-dredge survey will be undertaken by Departmental Representative upon completion of dredging. Survey will confirm if dredging is completed as specified and whether area can be considered cleared area. Survey will be by electronic sweep equipment. Survey plan at

1.13 Surveys and Acceptance of Work (Cont'd)

.2 (Cont'd)
1:500 plotting least of minimum depths obtained in this survey will identify areas requiring reworking to obtain following elevations using least of minimum mode

.3 Contractor to redredge as necessary to remove all material within dredge areas which is found to be above grade.

.4 One additional survey will be undertaken at Departmental Representative's cost, for those areas not meeting acceptance criteria for dredging. All additional surveys required to clear areas will be undertaken by the Departmental Representative at Contractor's cost.

.5 After dredging soundings will be taken by the Departmental Representative upon completion of the Contractor's dredging and no dredge area shall be determined complete until after it has been cleared to the specified grade depth or until so directed by the Departmental Representative.

PART 2 - PRODUCTS

2.1 Dredging Equipment

.1 Contractor to determine required equipment necessary to dredge material specified and to dispose of dredged material at locations indicated.

PART 3 - EXECUTION

3.1 Layout of Work

.1 The contractor will layout the work based on sketches provided by the Departmental Representative, taking into account the dynamics of the sand bars which may change from what is depicted on surveys or a sketch. Similarly the disposal site may change location. (to be located on top of the offshore sand bar)

3.1 Layout of Work (Cont'd)

.2 Install pins at the corners of the dredging area to be dredged.

.3 Positions of pins may be verified in the field by PWGSC.

3.2 General

.1 Mark floating equipment with lights in accordance with International Rules of Road and maintain radio watch on board.

.2 Place and maintain buoys, pins, ranges, markers and lights required to define work and disposal areas.

.3 Lay out Work from bench marks ranges and base lines established by Departmental Representative. Be responsible for accuracy of Work relative to established bench marks ranges and baseline. Provide and maintain electronic position fixing and distance measuring equipment, laser transits and such other equipment as normally required for accurate dredging control.

.4 Establish and maintain tide boards in order that proper depth of dredging can be determined. Locate tide boards so as to be clearly visible.

.5 Dredge side slopes to two horizontal to one vertical.

.6 Remove materials above specified grade depths, within limits indicated. Material removed from below grade depth or outside specified area or side slope is not part of Work.

.7 Remove shoaling which occurs as result of Work at no expense to Departmental Representative.

.8 Remove infilling in dredge areas which occurs prior to acceptance by Departmental Representative.

.9 Immediately notify Departmental Representative upon encountering object which might be classified as obstruction. By-pass

3.2 General (Cont'd)

.9 (Cont'd) object after clearly marking its location and continue Work.

3.3 Disposal of Dredged Material

.1 Dispose of dredged material by depositing in disposal areas in manner approved by Departmental Representative.

.2 Define area of disposal site with marker buoys and maintain minimum depth of water of 0.0m below Chart Datum at disposal site.

.3 Disposal of dredged material will be carried out in accordance with the terms and conditions set down in permits issued by Environment Canada pursuant to the Canadian Environmental Protection Act and Regulations there under.

3.4 Re-dredging

.1 Re-dredge unsatisfactory Work and verify depths with additional sounding to approval of Departmental Representative.

3.5 Co-operation and Assistance to Departmental Representative

.1 Co-operate with Departmental Representative on inspection of Work and provide assistance requested.

.2 On request of Departmental Representative, furnish use of such boats, equipment, labour and materials forming ordinary and usual part of dredging plant as may be reasonably necessary to inspect and supervise work.

END

PART 1 - GENERAL

1.1 Description

.1 This section will specify the operations of the containment cell at Loggiecroft Wharf, which is designed to accomodate the dredged materials.

.2 Operation of the cell extends from the time soils and water are placed in the cell until consolidation is near completion and subgrade can support pedestrian and equipment loads.

1.2 Related Sections

.1 Dredging Section 35 20 23
.2 Site Work Section 31 23 13

1.3 Measurement of Payment

.1 Payment is under the Section Site Work, Section 31 23 13

PART 2 - PRODUCTS

2.1 Silt Curtain

.1 Physical Properties to ASTM D4595, CAN/CGSB-4.2 No.4.2, CAN/CGSB-148.1 No 14 and ASTM D4751; supplied in rolls of minimum 3.0 metres width and to 3 the following properties or equivalent:
.1 Mass(g/m2) 259 to 270
.2 Specific Gravity 1.38
.3 Thickness (mm) 3.15
.4 Tensile Strength (N) 635 -660
.5 Elongation at Break(%) 100-105
.6 Mullen Burst Strength (kPa) 1700
.7 Opening Size (um) 2.0 X10-1

.2 The properties listed meet a Terrafix Terrafix 360R or Mirafi P150.

2.2 Filter fabric .1 Same as 2.1.1

2.3 Safety Fencing .1 High-density Polyethylene, International Orange, UV Stabilized, Rot and Rust Proof, Reusable, fencing in rolls 1.22m x 15m. Mesh sizes 38mm x 75mm.

.2 Wooden or Tee Posts, 1.8 meters in length.

.3 Wire ties.

2.4 Signs .1 300mm x 450mm corigated plastic, white, Font 50 mm, black

.2 RESTRICTED ACCESS UNSTABLE GROUND / ACCESS RESTREINT SOL INSTABLE

PART 3 - EXECUTION

3.1 Security .1 Provide safety fencing around perimeter of containment cell, clearly delinating the hazard of the water/spoil filled pond and eroding side slopes.

.2 Manage the closed area on a daily basis by securing gates and maintaining restricted access signs.

.3 Have permenantly installed on each face of the fence, inside the secured area, throw ropes of sufficient length to reach across more than half of the cell, attached to a floating ring for use to rescue from water/spoils.

.4 The security fence and rope and floatation rings will be removed as soon as the spoil pile is firm enough to support foot traffic.

3.2 Decant Area

.1 The decant area is required should a suction dredge be employed to carry out dredging. Alternative dredging techniques where water and solids do not pour our of the containment cell may not require a decant cell.

.2 Supply full depth silt curtain. Silt curtain will be installed full depth from high water to the harbour bottom at high tide, and weighted on the bottom to prevent drifting and leaking.

.3 The curtain will be installed in such a manner along the shore lines to prevent the drift of finer sediments past the curtain.

.4 The Contractor is to submit details how the silt curtain will be constructed and attached, its anchoring detail, and plans for its removal.

.5 Dredge decant area after harbour dredging is completed to elevation 1.5m to remove any overflow materials.

.6 The curtain will remain in place for 96 hours after in-water activity has ceased.

3.3 Water Control

.1 The functioning containment cell will allow sediments and water to be emptied into the cell, where most of the solids will separate from the water, and the water to return to the Harbour. The quantity of water to be managed depending upon the dredging method used.

.2 Cutter suction dredging or similar systems requires a holding period within the cell to allow water to decant its solids before exiting the weir. As the height of the spoils inside the cell increases, so must the height of water. Water is to be ponded above the spoils at all times.

.3 If the velocity of water increases to a point that sediments do not separate from water, it may be necessary to either reconfigure sediment inside the pond or slow dredging production.

3.4 Draining Cell

.1 During dredging, excess water from pumping is to be returned to the harbour via an artifical channel or pipelines.

.2 The details of the construction and maintenance of artificial channels is to be provided to Departmental Representative.

.3 The water will be emptied behind a silt curtain.

.4 Water draw down when dredging is completed may be required. Excess water draining from the cell is not to enter the harbour directly.

.5 Ensure water from the spill way doesn't enter the brook, water must be returned to the harbour via boat ramp location.

END