Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 01 10 10 – General Instructions.

.2 Section 01 35 29 – Health and Safety Requirements.

.3 Section 01 35 43 – Environmental Procedures, Marine Work.

.4 Section 01 74 21 – Environmental and Waste Management Plans.

1.2 GENERAL DESCRIPTION

.1 The material to be dredged is classified as a Class B material and is generally found to be mostly sand with some silt and clay and seaweed.

1.3 MEASUREMENT PROCEDURES

.1 Only material excavated above grade plane and within limits indicated or specified will be measured.

.2 Dredging will be measured in Cubic Metres, In-place Measurement [CMPM] basis as follows: volume to be measured from existing seabed elevations established from sounding survey down to grade depth elevation specified.

.1 For purpose of quantity computation, existing seabed elevation will be represented by "Average" sounding for each matrix block of survey by Departmental Representative as soon as practical after Contract award. Post dredging elevation for quantity computations will be shallowest of grad, bedrock or "Average of Instantaneous" sounding for each matrix block.

.2 Minimum call-up will be 1,000 CMPM.

.3 Measurement will be based on sounding surveys performed by the Departmental Representative before and after dredging. This survey will be used for the determination of measurement for payment of material dredged, regardless of when the specified area(s) are dredged by the Contractor. The Departmental Representative may verify that the dredging Contractor has performed dredging to the specified grade depth with a final after dredging survey. If the survey shows that grade depth has not been obtained, the Contractor is to re-dredge to obtain grade depth. The Contractor will perform sounding surveys, using a method approved by the Departmental Representative, to verify that the specified dredge depth has been obtained. The Departmental Representative may then perform a second sounding survey for final verification of dredge depth. This second acceptance survey and any subsequent surveys required until work is accepted will be at the cost of the Contractor. It should be noted that it is possible that infilling may occur in the dredge area(s) prior to final acceptance. The removal of infilling material by whatever causes will be incidental to the work and not measured separately for payment.

.4 All operations in connection with field positioning of dredging equipment will be considered incidental to the work and will not be measured separately for payment.

.5 No extra payment will be made for Contractor's survey vessel, equipment and crew or diving services and safety requirements.

.6 Payment will include disposal of dredge material to the designated ocean disposal site or confined disposal facility.

.7 No additional payment for delays incurred during fishing seasons, during periods when no dredging is permitted, downtime and for delays caused by vessel traffic and/or weather.

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

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

.10 Arrange and pay for mooring facilities for dredge plant (if applicable).

.11 Obstructions:

.1 Removal of obstructions, authorized by the Departmental Representative will be measured in hours actually used in removal.

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

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

.13 Mobilization and demobilization of dredging equipment (dredge, support vessels, pipeline, etc.) to be paid for in lump sum. This item will be measured each time a call-up is made under the standing offer, regardless of the method of measurement used for dredging. Half of the sum allocated for mobilization and demobilization, less holdback shall be payable upon commencement of dredging and the remainder shall be payable after project completion.

.1 Moving off the channel to accommodate fishing vessels is incidental to the work, and will not be measured for payment.

.2 Mobilization and demobilization will not be paid if the dredge and pipeline is already on-site and have been paid the mobilization and demobilization from a previous call-up.

.3 Mobilization between harbours by way of sea after the completion of a call-up will be paid at a negotiated rate prior to mobilization.

.4 Any remediation to prevent the possible transport of alien/invasive species from port to port will be considered incidental to the work. Refer to Environmental Procedures, Marine Work, Section 01 35 43.

.5 Multiple dredging equipment used to increase production is paid as a single mobilization.

.14 Additional Work Related to Dredging, is intended to be used for extra or unforeseen issues, work or situations. Any payment under this line item will be negotiated between the contractor and the Departmental Representative prior to commencement of said work.

1.4 REFERENCES

.1 Definitions:

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

.2 Class A material: solid rock requiring drilling and blasting to loosen, and boulders 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 CMPM: cubic metres place measurement.

.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 to be above grade and within specified side slopes unless otherwise specified.

.9 Side slope: inclined surface or plane from subgrade 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 (LNT).

.11 Universal Transverse Mercator Projection (UTM) or Modified Transverse Mercator Projection (MTM) Co-ordinates: plane rectangular coordinates used in grid system in

which grid network is applied to UTM. or MTM. projection. Horizontal control information as indicated.

.12 Minimum Mode: mode of operation of hydrographic survey equipment where minimum sounding is the shallowest depth recorded inside a matrix block. Soundings taken in this mode may be shallower 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 several soundings contained within it.

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

.15 Instantaneous Average Mode: mode of operation of hydrographic survey equipment where average sounding depths observed are recorded within a matrix block.

.16 Average of Instantaneous Plan: hydrographic survey plan in which average sounding recorded within a matrix block.

.17 Lowest Normal Tide (LNT): 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 SUBMITTALS

.1 The Contractor should complete and submit a copy of the tables in Appendix "A" with their tender which list all materials and equipment the contractor proposes to use under this contract. Prior to award, the Departmental Representative will review the capabilities of the contractor to perform the work.

.2 The Contractor should complete and submit a copy of the tables in Appendix "A" with their tender which list previous related works the contractor has completed. Prior to award, the Departmental Representative will review the capabilities of the contractor to perform the work.

.3 Submit to the Departmental Representative, prior to work, a site specific safety plan. This plan is to have emergency numbers and contacts specific to Harbour Authority, property owners, emergency response, and operators of water intakes.

.4 Submit to the Departmental Representative, prior to start of work, a schedule of work including time periods during which each operation involved in Work will be undertaken.

.5 Adhere to schedule and take immediate action to correct any slippage by effectively altering existing dredging operations or mobilizing other equipment. Notify the Departmental Representative of corrective action to be taken.

1.6 REGULATORY REQUIREMENTS

.1 Comply with federal, municipal, provincial and national codes and regulations relating to project.

.2 Application for the permits for Ocean Disposal at the specified locations have been made by the Departmental Representative. The copies of the permits will be forwarded to the Contractors where required.

.3 The Contractor shall observe and comply with all provisions, conditions and restrictions contained in the permit(s).

.4 Mark floating equipment with lights in accordance with Regulations for the Prevention of Collisions and Notice to Mariners.

.5 Cooperate with and provide assistance to inspectors of the Regulatory Agencies to board and inspect equipment and operations at any time during the project.

1.7 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 21.

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

1.8 NAVIGATION CO-ORDINATION

.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.

.2 Clearly mark dredging area(s), disposal area 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.

.3 The Contractor is responsible for all costs associated with the supply, installation and removal of all necessary temporary aids.

.4 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.

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

.6 The Departmental Representative 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.

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

.8 At no time without written consent from the Departmental Representative shall the contractor move any navigation buoys.

1.9 DATUM, WATER GAUGES AND TARGETS

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

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

1.10 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 Industry Canada, Marine Directorate and this certificate to accompany Tender submission. Submit this certificate with equipment information.

.2 Requests for certification in format of attached questionnaire to be directed to Director, Defense and Marine, Directorate, Industry Canada, 235 Queen Street, 7th Floor, East Tower, 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 and described within this document.

1.11 SITE CONDITIONS

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

.2 Results of prior soundings may be available for inspection at the Departmental Representative’s office.

.3 Results of prior soundings may be made available for tendering purposes only. It should be noted that this information may differ from site condition. Take this into consideration when submitting tender.

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

1.12 SURVEY REQUIREMENT

.1 Provide, at own expense, vessel, equipment and crew to set up and maintain control for location of dredge limits and to sound areas immediately after dredging to verify that grade depth has been attained.

.2 The contractor is to provide at their expense a GPS unit to record and report position in UTM coordinates. The contractor is to report the position of loading and disposal locations on a daily basis during all dredging activities to the Departmental Representative.

1.13 SURVEYS AND ACCEPTANCE OF WORK

.1 Departmental Representative will arrange to complete a pre-dredge survey of all areas to be dredged. The survey will be by electronic survey equipment sounding. Survey plan at 1:500 scale plotting average soundings obtained in this survey will define actual pre-dredge seabed area.

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

.3 Post-dredge survey will be a measurement based on sounding surveys undertaken by the Departmental Representative upon completion of dredging. Survey will confirm if dredging is completed as specified and whether area can be considered clear. Survey plan at 1:500 scale plotting "minimum" depths obtained in this survey will identify areas required for reworking to obtain following elevations using least of minimum mode. This survey will be used for the determination of measurement for payment of material dredged, regardless of when the specified area(s) are dredged by the Contractor.

.4 If the survey shows that grade depth has not been obtained, the Contractor is to re-dredge to obtain grade depth. The Contractor will perform sounding surveys, using a method approved by the Departmental Representative, to verify that the specified dredge depth has been obtained. The Departmental Representative may then perform a second sounding survey for final verification of dredge depth. This second acceptance survey and any subsequent surveys required until work is accepted will be at the cost of the Contractor. It should be noted that it is possible that infilling may occur in the dredge area(s) prior to final acceptance. The removal of infilling material by whatever causes will be incidental to the work and not measured separately for payment.

.5 All elevations obtained in average of instantaneous mode within the specified areas of dredging must be at or deeper than grade before the area will be considered complete.

Part 2 Products

2.1 DREDGING EQUIPMENT

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

.2 The equipment shall be in good condition and be environmentally safe with no leakage of petroleum products into the environment.

.3 Due to environmental concerns and site limitations, the requirement will be for a suction dredge type of equipment. A different type of dredge may be acceptable in some cases. If the department requires a specific type, this would be specified at the time of the request.

.4 The disposal operation would involve disposal via pipeline to the disposal site. See Section 01 10 10 for information on disposal sites.

.5 The Contractor should complete and submit a copy of the tables in Appendix "A" with their tender which list all materials and equipment the contractor proposes to use under this contract. Prior to award, the Departmental Representative will review the capabilities of the contractor to perform the work.

.6 The Contractor should complete and submit a copy of the tables in Appendix "A" with their tender which list previous related works the contractor has completed. Prior to award, the Departmental Representative will review the capabilities of the contractor to perform the work.

.7 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's.

.8 Report all dredge quantities to the Departmental Representative at a minimum of every 24 hours. The contractor is to report the position of loading and disposal locations on a daily basis during all dredging activities to the Departmental Representative.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of location:

.1 Work comprises dredging of areas/harbours/channels as indicated.

.2 The contractor will layout the work based on drawings provided by the Departmental Representative, taking into account the dynamics of the sand bars which may change from what is depicted. Similarly the disposal site may change location.

.3 All dredging (no matter location), use GPS unit to record and report position in UTM coordinates. The contractor is to report the position of loading and disposal locations on a daily basis during all dredging activities to the Departmental Representative.

.4 Position of work may be verified in the field by the Departmental Representative.

.5 Surveys and acceptance of work:

.1 Departmental Representative will arrange to complete a pre-dredge survey of all areas to be dredged prior to the commencement of any dredging activities. Surveys will be performed by electronic survey equipment sounding in average instantaneous mode.

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

.3 Post-dredge survey will be undertaken by the Departmental Representative upon completion of dredging. Survey will confirm if dredging is completed as specified and whether area can be considered cleared area.

.4 Contractor to re-dredge as necessary to remove all material within dredge areas which is found to be above grade.

.5 No additional surveys will be undertaken at the Departmental Representative's cost, for those areas not meeting acceptance criteria for dredging. Additional surveys required to clear areas will be undertaken at Contractor's cost.

.6 All elevations obtained in minimum mode within specified areas of dredging must be at or deeper than grade before area will be considered completed.

3.2 DREDGING

.1 Mark floating equipment with lights in accordance with International Rules of Road, Regulations for the Prevention of Collisions, Notices to Mariners and maintain radio watch on board.

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

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

.4 Dredge specified areas to grade depth, typical dredge depth will be of EL -1.8 m LNT.

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

.6 Remove materials above specified grade depths, within limits indicated. Material removed from below subgrade 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 the Departmental Representative.

.8 Casting-over of dredged material on to surrounding area is not permitted, unless the Departmental Representative has agreed to this arrangement.

.9 Be responsible for the removal of infilling in dredge areas which occurs prior to acceptance by the Departmental Representative.

.10 Immediately notify the Departmental Representative upon encountering object which might be classified as obstruction. By-pass the object after clearly marking its location and continue Work.

.11 If work is to be carried out in other than the daylight hours, it will be the Contractor's responsibility to provide all light and power necessary to carry out the work.

.12 Contractor is to notify the Departmental Representative 72 hrs prior to the commencement of any disposal at sea activities.

3.3 EXISTING NAVIGATION BUOYS

.1 The Contractor will make arrangements with Canadian Coast Guard for the removal and re-installation of any existing buoys, as required to carry out the dredging operations.

3.4 DISPOSAL OF DREDGED MATERIAL

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

.2 The dredging and disposal of the dredged material will be carried out in accordance with the terms and conditions set down in applicable permits.

.3 The disposal site coordinates are indicated in ocean disposal permit.

.4 Define area of disposal site using industry practices.

3.5 SITE QUALITY CONTROL

.1 Site test and inspections:

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

.2 Upon request of the 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. The Contractor will provide an approved duty boat under this contract. The boat will be on duty at all times throughout the duration of the contract. It will also be available for the use of the Departmental Representative when required.

.2 Non-conforming work:

.1 If, as result of incomplete Work, additional verification of depths by sounding or sweeping becomes necessary, additional costs involved shall be paid by Contractor.

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

3.6 DREDGING AND DISPOSAL RESTRICTIONS

.1 Ocean Disposal permits will specify a quantity of Disposal dredged material which may not be exceeded. At the time of call-up, the Departmental Representative will highlight to the Contractor any limits which are to be adhered to. Any and all costs for permit violation will be the contractor's responsibility.

.2 Where applicable, only the permitted disposal sites listed in the permit, and as shown on the plans from the Departmental Representative can be used for ocean disposal of the material.

.3 Floating dredging equipment shall not conflict with fishing vessels using the channel. The equipment is to utilize only one half of the channel at a time when dredging and move off the channel to allow ferry traffic to pass. It may be necessary to submerge the pipeline from the suction dredge to provide continuous navigation.

.4 The material dredged by the suction dredge is to be pumped through the pipeline to the prescribed disposal site.

END OF SECTION