

PART 1 - GENERAL

1.1 RELATED
SECTIONS

- .1 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Section 31 36 19 - Rock Mattress.

1.2 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 4 m³ 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 4 m³.
- .4 Obstructions: material other than Class A, having individual volumes of 4 m³ 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 (hard bottom).
- .8 Estimated quantity:
 - .1 Volume of material calculated to be above hard bottom 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 Coordinates:
 - .1 U.T.M.: universal transverse mercator projection.
 - .2 M.T.M.: modified transverse mercator projection.
 - .3 U.T.M. or M.T.M. Coordinates: plane rectangular coordinates used in grid system in which grid network is applied to U.T.M. or M.T.M. projection. Horizontal control information as indicated.
- .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 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 Instantaneous Mode: mode of operation of hydrographic survey equipment where only sounding observed at predetermined distance interval is retained in memory.
- .16 Average of Instantaneous Plan: hydrographic survey plan in which average sounding in appropriate grouping of matrix blocks is plotted.
- .17 Lowest Normal Tide (LNT): plane so low that tide will seldom fall below it.

1.3 REGULATORY
REQUIREMENTS

- .1 There are strict environmental procedures that must be followed during the Work.
- .2 Comply with municipal, provincial and national codes and regulations relating to project.
- .3 Mark floating equipment with lights in accordance with the provisions of the Canada Shipping Act Collision Regulations and Notices to Mariners.

1.4 WASTE
MANAGEMENT AND
DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 All dredged and excavated material must be disposed of at an authorized landfill facility, using water tight trucks, as directed by the Departmental Representative.
- .3 Contaminated sediments must be disposed of in confined disposal facility or capped disposal site.

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

1.5 SCHEDULING

- .1 Submit to Departmental Representative, within 2 weeks after acceptance of bid, schedule of work including time periods during which each operation involved in Work will be undertaken. At time of submission of schedule, meet with Departmental Representative to review schedule.
- .2 Adhere to schedule and take immediate action to correct any slippage by effectively altering existing dredging operations or mobilizing other equipment. Notify Departmental Representative of corrective action to be taken.

1.6 LOCATION

- .1 Work comprises dredging to hard bottom, prior to rock mattress placement. Departmental Representative will be sole judge as to location of hard bottom.

1.7 INTERFERENCE TO NAVIGATION

- .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, marine operations and construction activities at wharf sites, or access to wharves by land or water.
- .2 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.

- .3 Keep the Marine Communications and Traffic Services' Centre, Fisheries and Oceans Canada, informed of dredging operations in order that necessary Notices to Mariners will be issued.

1.8 DATUM, WATER
GAUGES AND TARGETS

- .1 Elevations used in this specification and contract drawings are in metres referred to Canadian Hydrographic Services Survey datum.
- .2 Areas to be dredged are to be referenced to vertical bench marks for each location of dredging as indicated.
- .3 Chart datum for soundings indicated is assumed to be +2.637 m below Bench Mark BP 1-1987.

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 Industry Canada, Aerospace, Defence and Marine Branch and this certificate to accompany bid submission.
- .2 Requests for certification in format of form PWGSC-TPSGC 2843 (06/2007) attached to the Bid and Acceptance Form to be directed to Mr. Emile Rochon, Aerospace, Defence and Marine Branch, Industry Canada, CD Howe Building - Room 733C, 235 Queen Street, Ottawa, Ontario, K1A 0H5, and to be received there not less than 14 days prior to bid closing.

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 bidding.

1.11 SITE
INFORMATION

- .1 Results of most recent geotechnical investigations are shown on the drawings. Additional information pertaining to sub-surface conditions may be available for inspection by contacting the Contracting Officer.
- .2 Results of most recent soundings are included on the drawings. This data will be used for all calculations for quantity purposes. If the contractor wishes to perform own survey, a written notice must be submitted to the Departmental Representative (at least 7 days notice) so PWGSC can verify the sounding survey before the commencement of any work.
- .3 Results of prior soundings and geotechnical investigations are made available for bidding purposes only. It should be noted that this information may differ from site condition. Take this into consideration when submitting bid.
- .4 Borehole descriptions are provided to give a description of overburden and bedrock only. Contractor is responsible for his own assumptions and interpretations of the information provided in determining its method of work and associated pricing of the bid.
- .5 Take necessary steps to become fully familiar with potential inclement weather and sea conditions in this area.

1.12 SURVEY
REQUIREMENTS

- .1 Provide, at own expense, survey 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. Areas are to be sounded to provide sounding printout display of at

least 1 x 1 m UTM grid to approval of
Departmental Representative.

1.13 SURVEYS AND
ACCEPTANCE OF WORK

- .1 As soon as practical after acceptance of bid, Departmental Representative will complete pre-dredge survey of all dredge area locations Contractor has 7 days to accept sounding survey in contract. If any differences are found, Departmental Representative will complete new pre-dredge survey of all dredge area locations within 7 days of the request. Survey will be by electronic survey equipment sounding in instantaneous mode. Survey plan at 1:250 scale plotting average of instantaneous depths obtained in this survey will define actual pre-dredge seabed areas.
- .2 No area will be dredged prior to Departmental Representative and Contractor's mutual acceptance of pre-dredge survey for that area.
- .3 Post-dredge survey will be undertaken by Departmental Representative upon completion of dredging. Survey will be by electronic sweep equipment. Survey plan at 1:250 plotting least of minimum depths obtained in this survey will identify areas requiring reworking to obtain following elevations using least of minimum mode.
- .4 Contractor to redredge as necessary to remove all material as directed by the Departmental Representative using the least of minimum mode elevations as specified herein.

- .5 One additional survey will be undertaken at Departmental Representative's cost, for those areas not meeting acceptance criteria for dredging. All additional surveys required will be undertaken by the Departmental Representative at Contractor's cost.
- .6 Departmental Representative will take average of instantaneous soundings simultaneously with least of minimum soundings.
- .7 All elevations obtained in minimum mode within specified areas of dredging must be to the approval of the Departmental Representative before dredging will be considered completed.
- .8 The Contractor shall be responsible to place rock mattress on hard bottom. The Contractor shall demonstrate through the use of dredging equipment or other means, that sufficient material has been removed to ensure rock mattress material will come to rest on hard bottom. Once the Contractor has determined that hard bottom has been achieved through dredging equipment, the Contractor shall thoroughly probe the area in a minimum 1 meter by 1 meter (1 m x 1 m) grid to confirm that all loose and soft unsound soils have been removed to hard bottom. All probing activities to be completed by divers using a 15 mm Ø x 200 mm long steel rod driven with a 2.5 kg hammer. Unless otherwise directed by the Departmental Representative, hard bottom is to be considered to be achieved when the probe cannot penetrate more than 400 mm into the underlying soils, within the footprint of the area to receive rock mattress. All work to be overseen by the on-site inspector. If the probe penetrations

exceed 400 mm, than the Contractor shall be responsible to continue dredging to a depth which hard bottom is reached and re-probe to achieve the requirements noted above. The Contractor and the Departmental Representative shall agree on site as to when the dredge depths required to reach hard bottom are met.

1.14 MEASUREMENT
FOR PAYMENT

- .1 Only material excavated above hard bottom and within side slopes indicated or specified will be measured.
- .2 Dredging: will be measured in cubic metres, in-place measurement CMPM, determined from existing seabed elevation established from the current sounding survey down to hard bottom as approved by Departmental Representative and as determined by probing the area, to the requirements noted herein, to confirm that all loose and soft soils have been removed. Quantities will be determined by a sounding survey performed by the PWGSC Survey Crew after dredging survey is completed by using electronic sounding and DPGS positioning equipment. The Departmental Representative will verify that the Contractor has performed dredging as specified. No payment will be made for over-dredging beyond the achieved hard bottom as directed by the Departmental Representative. PWGSC will conduct an interim and final survey. The Contractor will formally request at least seven (7) days in advance that the final after-dredging survey be performed upon completion of dredging. The survey will be dependent on the weather. If the survey and inspection shows that all material has not been removed to achieve hard bottom, the Contractor is to re-dredge as required achieve hard bottom. The Contractor will

perform a sounding survey, using a method approved by the Departmental Representative to verify dredge depths. The Departmental Representative will then perform a third survey for final verification. This third sounding survey and any subsequent surveys will be at the cost of the Contractor.

- .3 Obstructions.
 - .1 Removal of obstructions, authorized by Departmental Representative will not be measured separately for payment and will be included in the unit price of dredging.
- .4 All operations in connection with field positioning of dredging equipment will not be measured separately for payment.
- .5 No separate payment will be made for Contractor's survey vessel, equipment and crew or diving services.
- .6 No separate payment will be made for disposal of dredge material. Include all costs to dispose of dredge material to an authorized landfill facility, using water tight boxes, as directed by the Departmental Representative.
- .7 There will be no additional payment for delays and/or downtime for vessel traffic, fishery operations, marine operations, during periods when no dredging is permitted. Contractor should contact the Harbour Authority to determine schedules of operations.
- .8 Removal of infilling material will not be measured for payment.
- .9 No separate payment will be made for sweeping.

- .10 For payment purposes, side slopes shall be measured to the following limits.
 - .1 Class B material side slopes: 1.5 horizontal to 1 vertical

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 specified or indicated.

PART 3 - EXECUTION

3.1 GENERAL

- .1 Mark floating equipment with lights in accordance with the provisions of the Canada Shipping Act Collision Regulations and maintain radio watch on board.
- .2 Place and maintain buoys, markers and lights required to define work and disposal areas.
- .3 Lay out Work from control points and baselines established by Departmental Representative. Be responsible for accuracy of Work relative to established bench marks 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 water level gauges or tide boards in order that proper depth of dredging can be determined. Locate gauges tide boards so as to be clearly visible.
- .5 Establish and maintain on-land targets for

- location and definition of designated dredge area limits. Targets to be suitable for control of dredging operations and locating soundings. Remove targets on completion of Work.
- .6 The Contractor is responsible to dredge to hard bottom as approved by Departmental Representative and shall thoroughly probe the area in a minimum 1m x 1m grid to confirm that all loose and soft unsound soils have been removed to hard bottom. All probe work shall be completed by divers with a 2000 mm long, 15 mm diameter steel rod with sharpened end. The rod shall be driven with a 2.5kg hammer. Unless otherwise directed by the Departmental Representative, hard bottom is considered achieved when the probe does not penetrate more than 600 mm, over a given crib area, into the underlying soils. All work to be overseen by the onsite inspector.
- .7 Dredge side slopes to 1.5 horizontal to one vertical in Class B material.
- .8 Remove materials above hard bottom, within limits indicated. Material removed from below hard bottom or outside specified area or side slope is not part of Work.
- .9 Remove shoaling which occurs as result of Work at no expense to Canada.
- .10 Remove material cast-over on surrounding area and dispose of it as dredged material. Do not cast-over material unless authorized by Departmental Representative.
- .11 Remove infilling in dredge areas which occurs prior to acceptance by Departmental

Representative.

- .12 Immediately notify Departmental Representative upon encountering object which might be classified as obstruction. By-pass object after clearly marking its location and continue Work.
- .13 No dredging will be permitted from the existing wharf.

3.2 DISPOSAL OF
DREDGED MATERIAL

- .1 All dredged and excavated material must be disposed of at an authorized landfill facility, using water tight trucks, as directed by the Departmental Representative.
- .2 Dispose of dredged material to approval of Departmental Representative, using water tight truck boxes.

3.3 DREDGING IN
VICINITY OF
STRUCTURES

- .1 Do not dredge material from areas lying within 1 m of existing structure unless authorized by Departmental Representative.

3.4 RE-DREDGING

- .1 Re-dredge unsatisfactory Work and verify depths with additional sounding or sweeping 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. Volume of material

transported in partially filled scows will
be determined by Departmental
Representative.