

PART 1 - GENERAL

- 1.1 RELATED SECTIONS
- .1 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- 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 1.5 m<sup>3</sup> 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<sup>3</sup>.
- .4 Obstructions: material other than Class A, having individual volumes of 1.5 m<sup>3</sup> or more.
- .5 CMPM: cubic metres place measurement. SQM: area in square metres projected horizontal. CMSM: cubic meters scow 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.  
.2 Areas in square metres of material calculated horizontally to exist above grade and within dredge limits, 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.
- .18 Cleared Area: area of dredging accepted as achieving the required grade and verified by a PWGSC survey.

1.3 SUBMITTALS

- .1 Submit to Departmental Representative for approval, four weeks before blasting, details of proposed blasting operations showing types and quantities of explosives, loading charges and patterns, type of blasting caps, blasting techniques, blast protection measures, time of blasting and other pertinent details. Submit subsequent changes to Departmental Representative before proceeding.
- .2 Submit to Departmental Representative complete photographic and descriptive record of buildings, roads and structures in general area of Project Work, before blasting is started. Describe buildings both inside and out. Record existing cracks in walls or structural components.

1.4 REGULATORY REQUIREMENTS

- .1 There are strict environmental procedures that must be followed during the Work. Refer to attached documents listed in the Annexes.
- .2 Comply with municipal, provincial and national codes and regulations relating to project.

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- .3 Mark floating equipment with lights in accordance with the provisions of the Canada Shipping Act Collision Regulations and Notices to Mariners.
- 1.5 WASTE MANAGEMENT AND DISPOSAL
- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Contaminated sediments must be disposed of in confined disposal facility.
- .3 Metals, wood and recyclable materials removed during the dredging activities must be diverted appropriate recycling facilities.
- 1.6 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.
- 1.7 LOCATION
- .1 Work comprises of harbour dredging and dredging for marginal crib seat elevation in areas identified on the drawings.
- 1.8 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.

1.9 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.

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, 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.

- 1.11 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.
- 1.12 SITE INFORMATION
- .1 Results of the 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 survey 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 provided were obtained prior to wharf construction and berth dredging and are provided to give description of overburden and bedrock only.
- .5 Take necessary steps to become fully familiar with potential inclement weather and sea conditions in this area.

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- 1.13 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 2 x 2 m UTM grid to approval of Departmental Representative.
- 1.14 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 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 1:250 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 within dredge areas which is found to be above grade 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 to clear areas 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 at or deeper than specific dredge depth before area will be considered completed.

1.15 MEASUREMENT  
FOR PAYMENT

- .1 Only material excavated above grade plane and to designated marginal wharf crib seat elevation, (to limits indicated on drawings) and within side slopes indicated or specified will be measured.
- .2 Dredging: will be measured in cubic metres, in-place measurement CMPM, of combined Class A and Class B dredge material, determined from existing seabed elevation established from the current sounding survey down to grade depth elevation. 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 to the specified grade depth. No payment will be made

for over-dredging. 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, the Contractor is to re-dredge to obtain grade depth. The Contractor will perform a sounding survey, using a method approved by the Departmental Representative to verify that the specified dredge depth has been obtained. The Departmental Representative will then perform a third survey for final verification of dredge depth. 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 Payment will include disposal of dredge material, using water tight boxes, at locations specified or as directed by the Departmental Representative. Suitable dredge material as determined by Departmental Representative shall be disposed of at the disposal area as indicated on the drawings.

- .7 Payment will include disposal of contaminated dredge material to confined disposal facility as approved by the Departmental Representative.
- .8 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.
- .9 There will be no additional payment for downtime and for delays caused by vessel traffic.
- .10 Removal of infilling material will not be measured for payment.
- .11 Mobilization and demobilization of dredging equipment to be incidental to work with no separate payment.
- .12 No separate payment will be made for sweeping.
- .13 No separate measurement for payment to be made for dredging of sea bottom material for placement of rock mattress. Include all costs incidental to the unit price for rock mattress as per Section 31 36 19.
- .14 For payment purposes side slopes shall be measured from the toe of slope denoted on the drawings to the following limits.
  - .1 Class A material side slopes: 1 horizontal to 4 vertical.
  - .2 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 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 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 Dredge harbour area indicated to grade depth of EL -4.5 m below LNT.
- .7 Dredge to marginal wharf crib seat elevation as indicated on the drawings.
- .8 Dredge side slopes to 1.5 horizontal to one vertical in Class B material.
- .9 Dredge side slopes to one horizontal to four (4) vertical in Class A material.
- .10 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.
- .11 Remove shoaling which occurs as result of Work at no expense to Canada.
- .12 Remove material cast-over on surrounding area and dispose of it as dredged material. Do not cast-over material unless authorized by Departmental Representative.
- .13 Remove infilling in dredge areas which occurs prior to acceptance by Departmental Representative.
- .14 Immediately notify Departmental Representative upon encountering object which might be classified as obstruction. By-pass object after clearly marking its location and continue Work.
- .15 No dredging will be permitted from the existing wharf unless it is adequately protected from equipment track damage to the satisfaction of the Departmental Representative.

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- 3.2 CLASS 'A'  
REMOVAL
- .1 Provide specialist with qualifications acceptable to Departmental Representative and Municipal or Provincial Authorities to program and supervise blasting.
  - .2 Do blasting operations in accordance with local and provincial codes and in accordance with Department of Fisheries and Oceans Factsheet, Blasting - Fish and Fish Habitat Protection. Contact the Departmental Representative in this regard.
  - .3 Dredge side slope to one horizontal to a 4 vertical in Class A material.
- 3.3 DISPOSAL OF  
DREDGED MATERIAL
- .1 Dispose of remaining unsuitable dredge material to approved landfill site.
  - .2 Trucks used to haul dredge material must have water tight boxes. Contact town clerk, St. Lunaire prior to disposal operations. Contractor is responsible for obtaining and payment of dumping permit fee.
  - .3 Dispose of suitable dredged material by depositing it "on-site" in such a manner as approved by the Departmental Representative and conforming informing municipal, provincial and federal requirements. The contractor must backfill "on-site" disposal area to minimum limits as indicated on the drawings.
- 3.4 DREDGING IN  
VICINITY OF  
STRUCTURES
- .1 Do not dredge material from areas lying within 1 m of existing structure unless authorized by Departmental Representative.
- 3.5 SWEEPING
- .1 Sweep dredged areas on completion of dredging to confirm that grade depth has been achieved.

- .2 Sweeping equipment to consist of heavy steel beam suspended from scow at required grade depth or other approved method. Beam to be capable of adjustment and calibration and approved by Departmental Representative.
- .3 If, as result of incomplete Work, additional verification of depths by sounding or sweeping becomes necessary, additional costs involved shall be paid by Contractor.

3.6 RE-DREDGING

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

3.7 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.