

## **PART 1 - GENERAL**

### **1.1 DESCRIPTION**

- .1 This Section specifies the general requirements and execution for dredging, including the removal and disposal of dredged materials.
- .2 The dredging limits are as shown on the drawings.

### **1.2 RELATED SECTIONS**

- .1 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Section 31 23 16 - Rock Removal.
- .3 Section 31 53 13 - Timber Cribwork.

### **1.3 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.

**PART 1 - GENERAL**  
**(CONT'D)**

**1.3 DEFINITIONS**  
**(CONT'D)**

- .8 (cont'd)
- .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.

**PART 1 - GENERAL**  
**(CONT'D)**

**1.4 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.

**1.5 REGULATORY REQUIREMENTS**

- .1 There are strict environmental procedures that must be followed during the Work. (Refer to attached documents listed in the Appendices).
- .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.

**1.6 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 as required by Authorities having jurisdiction.
- .3 Metals, wood and recyclable materials removed during the dredging activities must be diverted to appropriate recycling facilities.

**1.7 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.

**PART 1 - GENERAL**  
**(CONT'D)**

**1.7 SCHEDULING**  
**(CONT'D)**

- .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.

**1.8 LOCATION**

- .1 Work comprises dredging of areas as indicated on the drawings.

**1.9 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 site, 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.

**1.10 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.

**1.11 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.

**PART 1 - GENERAL**  
**(CONT'D)**

**1.11 FLOATING PLANT**  
**(CONT'D)**

- .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.

**1.12 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.

**1.13 SITE INFORMATION**

- .1 Results of prior soundings, and geotechnical investigations are available for inspection, by appointment, at: Public Works and Government Services Canada, P.O. Box 4600, 6th floor The John Cabot Building, 10 Barter Hill, St. John's, NL, A1C 5T2.
- .2 Results of most recent soundings (2008 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 Take necessary steps to become fully familiar with potential inclement weather and sea conditions in this area.

**1.14 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.

**PART 1 - GENERAL**  
**(CONT'D)**

**1.15 SURVEYS AND ACCEPTANCE OF WORK**

- .1 After acceptance of bid, Contractor has fourteen (14) days to accept sounding survey in contract.
- .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.
- .4 Contractor to redredge as necessary to remove all material within dredge areas which is found to be above grade.
- .5 One additional survey will be undertaken at Canada'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 In the event that the approximate dredging limits to reach hard bottom, as shown on the drawings, are not achieved, the contractor, in consultation with the Inspector, is to demonstrate through the use of dredging equipment or other means, that sufficient overburden material has been removed to ensure rock mattress material will come to rest on hard bottom, prior to any placement of mattress material.

**1.16 MEASUREMENT FOR PAYMENT**

- .1 Berthing Depth Dredging of Class "A" and Class "B" materials: will be measured in cubic metres (m<sup>3</sup>), in-place measurement, 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 DGPS 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 timing of the survey may be dependent on weather and other circumstances. If the survey and inspection shows that all material has not been removed, the Contractor is to re-dredge to obtain grade depth.

**PART 1 - GENERAL**  
**(CONT'D)**

**1.16 MEASUREMENT FOR PAYMENT**  
**(CONT'D)**

.1 (cont'd)

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.

.2 For berthing depth dredging, only material excavated above grade plane and within side slopes indicated or specified will be measured.

.3 Crib Seat Excavation of Class "A" and Class "B" materials: No measurement to be made under this section for excavation required to bring the crib seat elevation to the depths specified on the drawings. Include all costs of mobilization and demobilization, excavation, placing of suitable excavated material at another location on site, and disposal of unsuitable material at an approved disposal site as incidental to the unit price for treated timber cribwork. There will be no compensation for additional cribwork required as a result of overexcavation.

.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 placement of suitable dredge material at another location on site, and disposal of unsuitable dredge material, using water tight boxes, at an approved disposal site, 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, or during periods when no dredging is permitted. Contractor should contact the Harbour Authority to determine schedules of operations.

.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.

**PART 1 - GENERAL**  
**(CONT'D)**

**1.16 MEASUREMENT FOR PAYMENT**  
**(CONT'D)**

- .10 There will be no additional payment for mobilization and demobilization of dredging equipment.
- .11 No separate payment will be made for sweeping.

**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.

**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 and/or tide boards in order that proper depth of dredging can be determined. Locate gauges and/or 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 areas to grades and depths shown on the drawings.



### **PART 3 - EXECUTION**

### 3.1 GENERAL (CONT'D)

- .7 Dredge side slopes as required.
- .8 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.
- .9 Remove shoaling which occurs as result of Work at no expense to Canada. Where shoaling occurs, Contractor to return the sea bottom elevations outside the footprint of the work to its original pre-construction elevations as determined by the pre-construction survey. This includes all areas over or near all dredge operation, excavation, and rock placement activities including barge work, dump scow routing to shore, temporary access infilling, transfer to shore operations as well as areas covered by silt plumes. As a minimum, sea bottom elevations will be compared by PWGSC after completion of Contractor's work and their confirmation of the above restoration for all areas within 15 meters of any of the above activities.
- .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 unless it is adequately protected from equipment track damage to the satisfaction of the Departmental Representative.

### 3.2 CLASS 'A' REMOVAL

- .1 Complete removal of Class 'B' material and obstructions in area before blasting for Class 'A'. Work toothed buckets over area to remove Class 'B' material until Departmental Representative is satisfied that further removal cannot be accomplished without blasting.

**PART 3 - EXECUTION**  
**(CONT'D)**

**3.2 CLASS 'A' REMOVAL**  
**(Cont'd)**

- .2 Provide specialist with qualifications acceptable to Departmental Representative and Municipal or Provincial Authorities to programme and supervise blasting.
- .3 Departmental Representative will retain specialist company to carry out seismographic survey before rock excavation is started, to determine maximum charges that can be used at different locations in area of rock excavation. Following survey, full report detailing control requirement throughout Project will be made available. Report or any part of it will not over-rule requirements of local authority having jurisdiction unless report requirements are more conservative.
- .4 Seismographic blast monitoring will be provided by Departmental Representative during entire progress of blasting operations.
- .5 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.

**3.3 DISPOSAL OF DREDGED MATERIAL**

- .1 Dispose of dredged material by depositing in disposal areas in manner approved by Departmental Representative, using water tight truck boxes.

**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.

**PART 3 - EXECUTION**  
**(CONT'D)**

**3.5 SWEEPING**  
**(CONT'D)**

- .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.