

**APPENDIX “C-2”  
TECHNICAL SPECIFICATIONS**

FISHERIES AND OCEANS CANADA – SMALL CRAFT HARBOURS – QUEBEC REGION  
BATHYMETRIC SURVEYS AT VARIOUS SITES – MAGDALEN ISLANDS  
Project number: F3731-130187                      TABLE OF CONTENTS                      PAGE 1

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**VARIOUS SITES IN THE MAGDALEN ISLANDS  
Riding: Gaspésie – Îles-de-la-Madeleine**

**Bathymetric Surveys (2014-2015)**

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Section 01 11 11  
WORK DESCRIPTION SUMMARY  
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**Part 1 General**

**1.1 SECTION INCLUDES**

- .1 Work covered by contract documents.
- .2 Contractor use of premises.

**1.2 PRECEDENCE**

- .1 Division 01 sections take precedence over technical specification sections in other divisions of this Project Manual.

**1.3 RELATED SECTIONS**

- .1 Section 35 20 23 – Dredging (Bathymetric surveys).

**1.4 WORK COVERED BY CONTRACT DOCUMENTS**

- .1 The purpose of this requirement is the completion of bathymetric surveys and the calculation of quantities (volumes) related to the dredging maintenance program of harbors fisheries located in the Magdalen Islands.
  - Verification
  - Before dredging
  - After dredging
  - Open sea disposal site
  - Artificial reefs site

The Contractor selected for the execution of works shall also provide calculations of quantities and provide all the necessary technical information to the drawing bathymetric surveys.

- .2 The Department wishes to award a contract for one year
- .3 The equipment of the Contractor must be available and mobilized within a period of 48 hours after the order of the Ministry Representative.

**1.5 CONTRACTOR USE OF PREMISES**

- .1 The Contractor may use the work location until the work is completed.
- .2 The Contractor shall limit its use of premises for work and for access to allow for:
  - .1 Use of the site by the Department.

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- .2 Public usage.
- .3 Mariners' usage.
- .3 Coordinate use of premises under direction of Departmental Representative.
- .4 The Contractor shall take all necessary action and safety precautions to protect persons, property and structures from accident or damage in the course of the work.
- .5 The Contractor shall carry out the work in such a way as not to interfere with normal use or activities or to compromise the safety of users.
- .6 The Contractor must make every possible effort to ensure the safety of all vessel crossings. The contractor must Communicate properly with Marine Communications and Traffic Services (MCTS) at all times.
- .7 The Contractor shall perform all work needed to ensure the continuity of existing services and allow authorized persons and vehicles to access the property.

**Part 2 Products**

- 2.1 NOT USED
  - .1 Not applicable.

**Part 3 Execution**

- 3.1 NOT USED
  - .1 Not applicable.

**END OF SECTION**

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SUBMITTAL PROCEDURES  
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**Part 1 General**

**1.1 REFERENCES**

- .1 Fisheries and Oceans Canada
  - .1 General Clauses and Conditions (see tendered document).

**1.2 ADMINISTRATIVE**

- .1 Submit to Departmental Representative submittals listed for review. Submit promptly and in orderly sequence so as to not cause delay in work. Failure to submit in ample time is not considered sufficient reason for extension of contract time and no claim for extension by reason of such default will be allowed.
- .2 Do not proceed with work affected by submittal until review of all submittals is complete.
- .3 Present shop drawings, product data, samples and mockups in SI metric units.
- .4 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been, or will be, determined and verified and that each submittal has been checked and coordinated with requirements of work and contract documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .5 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .6 Verify the accuracy of field measurements in relation to any adjacent structures affected by the work.
- .7 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .8 Contractor's responsibility for deviations in submission from requirements of contract documents is not relieved by Departmental Representative's review.
- .9 Keep one reviewed copy of each submission on site.
- .10 Accompany submissions with transmittal letter containing:
  - .1 Date.
  - .2 Project title and number.
  - .3 Contractor's name and address.

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- .4 Identification and quantity of each document.
- .5 Other pertinent data.

- .11 The Department will provide the Contractor with copies of dumping permits issued for each of the sites where the disposal is necessary. The Contractor shall display the license on the equipment used for this purpose.

1.3 CERTIFICATES AND TRANSCRIPTS

- .1 Immediately after awarding of Contract, submit to the Departmental Representative all documents required by the public agency having jurisdiction over worker protection in the event of a work-related accident.

Part 2 Products

2.1 NOT USED

- .1 Not applicable.

Part 3 Execution

3.1 NOT USED

- .1 Not applicable.

END OF SECTION

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Section 01 35 30(D)

BATHYMETRIC SURVEYS AT VARIOUS SITES HEALTH AND SAFETY REQUIREMENTS (BATHYMETRIC SURVEYS)

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**Part 1 General**

**1.1 SECTION INCLUDES**

- .1 The Contractor shall manage its operations so that safety and security of the public and of construction site/workplace workers and environmental protection always take precedence over cost and scheduling considerations.

**1.2 REFERENCES**

- .1 According to the context, the most recent of the following codes shall be used:
  - 1 Canada Labour Code - Part II, Canadian Occupational Safety and Health Regulations.
  - 2 Canadian Standards Association (CSA).
  - 3 Act respecting Occupational Health and Safety (R.S.Q., c. S-2.1) [2002].
  - 4 Construction Safety Code, S-2.1, r.6 [2001].
  - 5 Any other health and safety act or regulation that could be applicable under the company's status or the context of the work execution.

**1.3 SUBMITTALS**

- .1 Submit required documents according to section 01 33 00.
- .2 Submit to Departmental Representative the construction site/workplace-specific safety program as outlined in 1.8 - Safety and Health Management at least 10 days prior to start of work. The Contractor shall review its program during the course of the project in the event of changes to work methods or construction site/workplace conditions. The Departmental Representative may, after receiving the program or at any time during the project, ask the Contractor to update or modify the program in order to better reflect the reality of the construction site/workplace. The Contractor must make the required changes before work begins.
- .3 Submit to Departmental Representative within 24 hours a copy of any inspection report, correction notice or recommendation issued by federal or provincial inspectors.
- .4 Submit to Departmental Representative within 24 hours an investigation report for any accident involving injury or any incident exposing a potential hazard.
- .5 Submit to Departmental Representative all safety data sheets for hazardous materials to be used at the construction site/workplace at least three (3) days before they are to be used.

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- .6 Submit to Departmental Representative copies of all training certificates required for application of the safety program, in particular:
  - 1 First aid in the workplace and cardio-pulmonary resuscitation;
  - 2 Work in confined spaces;
  - 3 Lockout procedures;
  - 4 Wearing and fitting of individual protective gear;
  - 5 Any other requirement of Regulations or the safety program.
  
- .7 Medical examinations: wherever legislation, regulations, directives or a safety program require medical examinations, the Contractor shall:
  - 1 Prior to start-up, submit to Departmental Representative certificates of medical examination for all supervisory staff and employees who will be on duty when the construction site/workplace opens.
  - 2 Thereafter submit without delay certificates of medical examination for any newly hired personnel as and when they start work at the construction site/workplace.
  
- .8 Emergency plan: The emergency plan, as defined in 1.8.3 - Safety and Health Management, shall be submitted to Departmental Representative at the same time as the construction site/workplace-specific safety program.
  
- .9 Permits: Obtain all required municipal, provincial and federal permits according to contractual clauses. Send a copy of each permit to Departmental Representative without delay.
  
- .10 Plans and certificates of compliance: Submit to Departmental Representative copies, signed and sealed by Departmental Representative of working methods, of all plans and certificates of compliance applicable as follows:
  - 1 Any modification to equipment or a machine component unauthorized by the builder. Maintain copies of these documents at the construction site/workplace for the duration of the project.

1.4 SAFETY ASSESSMENT

- .1 The Contractor shall identify all hazards inherent in each task to be carried out at the construction site/workplace.
  
- .2 The Contractor shall plan and organize work so as to eliminate hazards at source or to promote collective protection so as to minimize reliance on individual protective gear. Where individual protection against falling is required, workers shall use a safety harness that meets standard CAN-CSA-Z259.10-M90. Safety belts shall not be used as protection against falling.

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- .3 Equipment, tools and protective gear which cannot be installed, fitted or used without compromising the health or safety of workers or the public shall be deemed inadequate for the work to be executed.
  - .4 All mechanical equipment shall be inspected before delivery to the construction site/workplace. Before using any mechanical equipment, submit to Departmental Representative a certificate of compliance signed by a qualified mechanic. In the event of suspicion of a defect or accident risk, Departmental Representative may at any time order the immediate shutdown of equipment and require a new inspection by a specialist of the representative's own choosing.
- 1.5 MEETINGS
- .1 The Contractor's decision-making representative shall attend all meetings at which construction site/workplace safety and health issues are to be discussed.
- 1.6 REGULATORY REQUIREMENTS
- .1 Comply with all legislation, regulations and standards applicable to the construction site/workplace and its related activities.
- 1.7 PROJECT/SITE CONDITIONS
- .1 At the construction site/workplace, take account of the following specific conditions:
    - .1 Risks related to trans-shipment, movements and boarding of floating equipment and manual labour around an excavator or a dragline in the course of dredging operations.
    - .2 Risks related to an accidental overboard spill of petroleum and cleaning operations to confine such spills.
- 1.8 SAFETY AND HEALTH MANAGEMENT
- .1 The Contractor shall acknowledge and assume all the tasks and obligations which customarily fall upon the principal Contractor and the employer under the terms of Occupational Health and Safety legislation applicable to the Contractor.
  - .2 The Contractor shall develop a construction site/workplace-specific safety program based on the hazards identified and apply it from the start of project work until close-out is completed. The safety program must take into account all information appearing in 1.7 – Project/Site Conditions and must be submitted to all parties concerned in accordance with the provisions set forth in 1.3 - Submittals. At a minimum, the construction site/workplace-specific safety program must include:
    - .1 Company safety and health policy;

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- .2 A description of the work, total costs, schedule and projected workforce curve;
  - .3 Flow chart of safety and health responsibility;
  - .4 The physical and material layout of the construction site/workplace;
  - .5 First-aid and first-line treatment standards;
  - .6 Identification of construction site/workplace-specific hazards;
  - .7 Risk assessment for the tasks to be carried out, including preventive measures and the procedures for applying them;
  - .8 Training requirements;
  - .9 Procedures in case of accident or injury;
  - .10 Written commitment from all parties to comply with the prevention program;
  - .11 A construction site/workplace inspection schedule based on the preventive measures in said program.
- .3 The Contractor shall draw up an effective emergency plan based on the characteristics and constraints of the construction site/workplace and its surroundings. Submit the emergency plan to all parties concerned pursuant to the provisions of 1.3 - Submittals. The emergency plan must include:
- .1 Evacuation procedure;
  - .2 Identification of resources (police, firefighters, ambulance services, etc.);
  - .3 Identification of persons in charge at the construction site/workplace;
  - .4 Identification of those with first-aid training;
  - .5 Training required for those responsible for applying the plan;
  - .6 Any other information needed in light of the construction site/workplace characteristics.

1.9 RESPONSIBILITY

- .1 Regardless of the size of the construction site/workplace or the number of workers at the site, the Contractor shall designate a competent person to supervise and take responsibility for health and safety. Take all necessary measures to ensure the health and safety of persons and property at or in the immediate vicinity of the construction site/workplace and likely to be affected by any of the work.
- .2 Take all necessary measures to ensure application of and compliance with the safety and health requirements of the contract documents and contractor's applicable federal and provincial regulations and standards as well as the construction site/workplace-specific safety program, complying without delay with any order or correction notice issued by an inspector.
- .3 Take all necessary measures to keep the construction site/workplace clean and in good order throughout the course of the work.

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1.10 COMMUNICATIONS AND POSTING

- .1 Make all necessary arrangements to ensure effective communication of safety and health information at the construction site/workplace. As they arrive at the construction site/workplace, all workers must be informed of their rights and obligations pertaining to the construction site/workplace safety program. The Contractor shall draw attention to workers' right to refuse to perform work which they feel may threaten their own health, safety or physical integrity or that of other persons at the construction site/workplace. The Contractor shall keep and update a written record of all information transmitted with signatures of all affected workers.
- .2 The following information and documents must be posted in a location readily accessible to all workers:
  - 1 Identification of employer and/or the principal Contractor;
  - 2 Company OHS policy;
  - 3 Construction site/workplace-specific safety program;
  - 4 Emergency plan;
  - 5 Data sheets for all hazardous materials used at the construction site/workplace;
  - 6 Minutes of construction site/workplace committee meetings;
  - 7 Names of Construction site/workplace committee representatives;
  - 8 Names of those with first-aid training;
  - 9 Action reports and correction notices issued by inspectors.

1.11 UNFORESEEN CIRCUMSTANCES

- .1 In the event that a source of danger not defined in the specifications or identified in the preliminary construction site/workplace inspection arises as a result of or in the course of the work, immediately suspend work, take appropriate temporary measures to protect the workers and the public and notify Departmental Representative both verbally and in writing. Then the Contractor must notify or update the construction site/workplace-specific safety program in order to resume work in safe conditions.

1.12 INSPECTION OF CONSTRUCTION SITE/WORKPLACE AND CORRECTION OF HAZARDOUS SITUATIONS

- .1 Inspect the construction site/workplace and complete the construction site/workplace inspection sheet at least once a week.
- .2 Immediately take all necessary measures to correct any deviations from legislative or regulatory requirements or hazards identified by a government inspector, by the Departmental Representative, by the construction site/workplace safety and health coordinator of PWGSC or during routine inspections.

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**Part 2 Products**

**2.1 NOT USED**

.1 Not applicable.

**Part 3 Execution**

**3.1 NOT USED**

.1 Not applicable.

**END OF SECTION**

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SECTION 01 35 43  
ENVIRONMENTAL PROCEDURES  
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**Part 1 General**

**1.1 PRECEDENCE**

- .1 Division 01 sections take precedence over technical specification sections in other divisions of this Project Manual.

**1.2 POLLUTION CONTROL**

- .1 Control emissions from equipment and plant in compliance with the emission requirements of local authorities.
- .2 Prevent fine material and other extraneous materials from contaminating air beyond application area.
- .3 Maintain on-site access to absorbents at all times to enable fast response in the event of a spill of hazardous material.
- .4 In case of accidental oil spill, the Contractor shall report the spill immediately to the Canadian Coast Guard emergency office at 1-800-363-4735 and take all requested actions to correct the situation and to limit the impact on the environment.
- .5 The Contractor must also have access on the dredge to a spill kit. The type of spill kit should be "Quatrex Q Ultra 75" or the equivalent. The Contractor should use the spill kit in the case of a hydrocarbon spill and apply aforementioned paragraph 1.4.4.
- .6 With respect to the transportation, handling and storage of dangerous goods on vessels or floating plant, the Contractor shall comply with the Canada Shipping Act (CSA) and all regulations made under the CSA.
- .7 Dredged material, waste or debris shall not be disposed of in waterways.
- .8 Petroleum products or any other hazardous substances shall not be stored within 30 metres of the shore.
- .9 Vehicle maintenance and fuelling shall not be done within 30 metres of the shore.

**1.5 AREAS OF EXCLUSION DREDGING AND/OR DISPOSAL**

- .1 Some areas within the area of dredging may have concentrations of chemicals that prevent either dredging or dumping of sediment at sea. Contractor shall not intervene within the limits defined as "areas of exclusion" without the written approval of the Department. The exclusion zones are shown in dredging approved templates for each site.

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- .2 Exclusion zones are based on the characterization of materials made on a regular basis. As exclusion zones may vary from year to year, the Contractor shall verify annually templates dredging prior to commencement of work.

**Part 2 Products**

- 2.1 NOT USED
  - .1 Not applicable.

**Part 3 Execution**

- 3.1 NOT USED
  - .1 Not applicable.

**END OF SECTION**

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SECTION 01 52 00  
CONSTRUCTION FACILITIES  
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**Part 1      General**

**1.1            SET-UP AND REMOVAL OF EQUIPMENT**

- .1      Supply and set up or otherwise develop the construction facilities required to enable completion of the work in a prompt manner.
- .2      Dismantle and remove all equipment from the site that is no longer required.

**1.2            PARKING ON-SITE**

- .1      Parking is permitted at the docks as long as it does not interfere with the regular movement of other users.
- .2      Clean all traffic lanes after they have accommodated work equipment.

**Part 2      Products**

**2.1            NOT USED**

- .1      Not applicable.

**Part 3      Execution**

**3.1            NOT USED**

- .1      Not applicable.

**END OF SECTION**

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**Part 1 General**

**1.1 RELATED SECTIONS**

- .1 Section 01 11 11 – Work Description Summary
- .2 Section 01 35 43 – Environmental Procedures

**1.2 MEASUREMENT PROCEDURES**

- .1 Item 1 - Unit Price: Bathymetric Survey verification before dredging, dredging and after reading disposal sites at sea.
  - .1 The unit price should represent the costs incurred by the Department in relation to the implementation / commissioning of the equipment and the Contractor mobilization to places required and demobilization of equipment from the Contractor when the work is completed.
  - .2 The unit price shall also include all necessary calculations of quantities works and the transmission of information necessary for the drawing of the bathymetric Engineering Program for Small Craft Harbours Fisheries and Oceans Canada service.
  - .3 The cost of site organization are included in the unit price
- .2 Miscellaneous considerations:
  - .1 The lump sum and the unit prices shall include all materials, transportation, leasing and installation of equipment, tools, labour and costs to carry out any work not specifically described in the plans, the specifications or any other bid documents but deemed necessary to ensure that the work is performed to professional standards.
  - .2 All of the work described in these specifications, represented in the plans or otherwise required to complete the work covered by these specifications but not defined as a separate component entitling the Contractor to a lump sum or unit payment shall be deemed directly or indirectly related to the general purpose of the contract, and no separate payment shall be made in respect of any such work; the cost of all work related directly or indirectly to the purpose of this contract shall, however, be included in the unit price.
  - .3 There shall be no additional payment for delays resulting from vessel traffic.
  - .4 There shall be no additional payment for downtime.

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- .5 There shall be no additional payment for downtime resulting from operational performance adjustments.
- .6 There shall be no additional payment for lost time resulting from weather conditions.

## 1.3 DEFINITIONS

- .1 Dredging: excavating, transporting and disposing of underwater materials, including the placement in barges with bottom opening (maries-salopes) excavated materials.
- .2 Removal: transportation and disposal in a land disposal area of excavated materials.
- .3 Debris: pieces of wood, wire rope, scrap steel, pieces of concrete and other waste materials.
- .4 Grade: plane above which all material is to be dredged.
- .5 m<sup>3</sup>pm: volume of material measured in place, in cubic metres.
- .6 m<sup>3</sup>sm: volume of material measured on barge, in cubic metres.
- .7 Side slope: surface or plane sloped relative to the dredging level, located at the side boundary of the dredged area and extending to the intersection with the natural level of the bottom outside that side boundary; the slope is expressed as the ratio between the horizontal and vertical dimensions.
- .8 DGPS-RTK Technology: a technology that provides a GPS position accurate to the nearest centimetre in x, y, z dimensions.
- .9 Chart datum: reference level set sufficiently low to ensure that the water level in tidal and non-tidal waters is rarely lower.
- .10 Coordinate system
  - .1 MTM project: modified transverse Mercator projection.
  - .2 MTM coordinates: plane rectangular coordinates used for graphic representation where a grid is applied to the MTM projection. The coordinates are the horizontal reference parameters.
- .11 "Instantaneous depth" mode: operating mode of bathymetric survey equipment whereby the system stores in memory every depth reading over the entire pass.
- .12 Matrix cell: Each dredging area is represented as a certain number of 2.0 m x 2.0 m or 4.0 m x 4.0 m cells. Depending on where the bathymetric surveys are done, a given cell may contain several depths.
- .13 "Shallowest depths" plan: bathymetric survey plan on which the depths indicated are the shallowest depths measured in each cell in the matrix.

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- .14 Verified area: dredging area deemed to comply with the plans and specifications.
- .15 Site Completion Certificate: letter or memorandum given to the Contractor by the Departmental Representative certifying that dredging at a particular site has been completed.

1.4 REGULATORY REQUIREMENTS

- .1 The Contractor shall, and shall ensure that all its employees, both actual and de facto, including its subcontractors, honour all third-party rights and privileges and comply with all federal, provincial and municipal laws, regulations and orders.
- .2 Mark floating equipment with lights in accordance with the International Regulations for Preventing Collisions at Sea and the Rules of the Road for the Great Lakes and maintain radio watch on board.

1.5 SCHEDULING

- .1 Before starting work or within two (2) weeks after the contract is awarded, submit to the Departmental Representative for approval a schedule of work that includes the projected length of each phase up to completion of the work.
- .2 The work shall be completed according to the date indicated in the contract documents.
- .5 The work schedule shall take into consideration the environmental protection information set out in Appendices 4 and 5. The Contractor shall take into consideration that these periods may vary during the term of the contract.

1.6 LOCATION

- .1 The following sites in Îles-de-la-Madeleine, Quebec, within the contract period:
  - Grosse-Île
  - Île-d'Entrée
  - Millerand
  - Pointe-Basse
  - Grande-Entrée
  - Havre-Aubert
  - Étang-du-Nord
  - Cap-aux-Meules
  - Pointe-aux-Loups
  - Various locations (open sea disposal sites)
  - Various locations (artificial reefs sites)

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- .2 Contract work consists of dredging basins and access to harbours in Magdalen Islands and open sea disposal sites and artificial reefs sites.

1.7 INTERFERENCE WITH NAVIGATION

- .1 Be familiar with vessel movements and fishery activities in areas affected by dredging operations.
- .2 Plan and execute work in a manner that will not interfere with fishing operations, marina operations, construction activities at wharf sites or access to wharves by land or water.
- .3 The Department will not be responsible for loss of time, equipment or material or any other cost related to interference with moored vessels at dredging sites or due to other Contractor operations.
- .4 At least forty-eight (48) hours in advance if possible, the Contractor shall advise the Departmental Representative of any special relocation of dredging equipment (for refuelling, repair, etc).

1.8 DATUM, WATER GAUGES AND TARGETS

- .1 Depths and grades used in this specification and contract drawings are in metres in relation to chart datum.
- .2 Depths (soundings) will be adjusted to chart datum using DGPS-RTK technology. The Contractor will be responsible for obtaining, by its own means and at its own expense, all relevant water level data needed for performance of the work.

1.9 FLOATING PLANT

- .1 All equipment used to execute the bathymetric surveys contract shall be at all times satisfactory to the Departmental Representative.

1.10 INSPECTION OF SITE

- .1 It is the responsibility of the Contractor before submitting the bid, to get to the place of work and get all the necessary information concerning the nature and scope of work and all conditions that may affect the execution of the said works.
- .2 By submitting its tender, the Contractor acknowledges that it is aware of the following: the nature and location of the project, general and local conditions, particularly weather or climatic conditions, the degree of agitation of the water surface, the tide levels and physical conditions associated with the location of the project, the nature of the underwater soil and riverbed, the nature of the materials to be dredged, and all other circumstances that could

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affect the conditions of execution of the contract and the value of the work. Ignorance of local conditions shall not at any time constitute a valid reason for claiming extra costs.

1.11 SITE INFORMATION

- .1 Take all necessary measures to become fully familiar with potential inclement weather and sea conditions in this area.
- .2 Results of the most recent soundings before dredging are included on the drawings. Pre-tender data are provided for tendering purposes only. It should be noted that this information may differ from actual site conditions.
- .3 Daily tide forecasts can be obtained from the following website: [www.waterlevels.gc.ca](http://www.waterlevels.gc.ca).

1.12 BATHYMETRIC SURVEYS AND ACCEPTANCE OF WORK

- .1 Bathymetric surveys will be made by the Department before the beginning of dredging to confirm the location of materials to be dredged as accurately as possible and to determine the quantity.
- .2 The pre-dredging survey shall be done not more than three (3) weeks prior to the start of work.
- .3 During the bathymetric surveys, a qualified representative of the Contractor shall be present with the Department's survey team so that the soundings are officially accepted by both parties.
- .4 The Departmental Representative shall provide the Contractor in ASCII digital format (see Appendix 1) the basic data required for the work (pre- and post-dredging bathymetric surveys); these digital files will be sent to the Contractor by e-mail.
- .5 In all cases, the bathymetric surveys will be carried out in daylight. Accordingly, the Department's vessel will dock at sundown.
- .6 The execution of bathymetric surveys depends on weather conditions.
- .7 The Department will not conduct any pre- or post-dredging surveys if there is ice present.
- .8 If, after the verification surveys or subsequent surveys have been done, there are still materials above the prescribed dredging level, the Contractor shall return to the site in order to complete the work to the satisfaction of the Departmental Representative.
- .9 Bathymetric survey equipment:
  - .1 Positioning system:
    - .1 Global positioning system (DGPS).

- 2 Equipment: Trimble 5700 or equivalent.
- 2 Sounding system:
  - 1 Single or multi-transducer system (1 or more).
  - 2 Vertical accuracy:  $\pm 0.1$  metres.
  - 3 Frequency: 200 kHz.
- 3 Sounding mode:
  - 1 Instantaneous depths.
- 4 Depth representation:
  - 1 Under matrix form.
  - 2 Cell dimensions: 2.0 m x 2.0 m (1: 500) or 4.0 m x 4.0 m (1: 1000).
  - 3 Drawn: least depth of each cell.
- 5 Acceptance of work:
  - 1 An ASCII file or paper plan based on the instantaneous depths will be given to the Contractor showing the locations where the prescribed depth was not met.
- 6 Calculation of volumes:
  - 1 Using a digital ground model generated using all of the instantaneous depths.

1.13 SYSTEM OF UNITS

- 1 Relevant data such as bathymetric surveys, water levels, distances, areas and volumes, vertical benchmarks (referenced to CD), etc. mentioned in this specification and during the execution of work will be in the International System of Units (SI).

Part 2 Products

- 2.1 N/A

Part 3 Execution

3.1 GENERAL

- 1 Before commencing work, the Contractor must obtain written approval of its work schedule from the Departmental Representative.

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- .2 Dredge areas within limits and to grade depth or up to bedrock as indicated on drawings.
- .3 The coordinates of control points to determine the horizontal limits of the sectors to be dredged will be provided by the Departmental Representative.
- .4 The Contractor is responsible for tracking the horizontal positioning of its own equipment.
- .5 The Departmental Representative may, at his or her discretion, check the accuracy of any positioning systems used by the Contractor.
- .6 The Contractor shall be solely responsible for all primary, intermediate or secondary points (x, y), (x, y, z) and (lat, long) used by it, whether determined by it or provided by the Departmental Representative or any other party and at its own risk.
- .7 Perform the work in such a way that no damage is caused to fishing gear, and minimize interference with fishing operations when dredging in the identified areas.
- .8 While the contract is being executed, all equipment must be kept in good working order and adequately repaired as needed. All equipment used must be seaworthy and in good condition.
- .9 Install and maintain tide gauges or water level indicators in order to be able to determine the appropriate depth of the dredging work. Place the tide gauges or water level indicators such that they are clearly visible.
- .10 The Contractor shall note that there may be more than one dredge grade per site.

**3.2 CO-OPERATION AND ASSISTANCE TO DEPARTMENTAL REPRESENTATIVE**

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

**3.3 WORK SCHEDULE**

- .1 The Contractor shall consider the submission that the work of bathymetric surveys could be carried out during weekends depending on the operational requirements of dredging.

**END OF SECTION**

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APPENDIX 1

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This appendix constitutes an integral part of the contract documents.

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## Appendix 1

This appendix constitutes an integral part of the contract documents.

### COMPUTER FILE FORMATS:

- East coordinate(metres) <space> North coordinate(metres) <space> Depth(metres)

288183.24 5237654.78 3.79

288181.90 5237652.29 3.80

288183.81 5237652.86 3.67

Note: The depth is positive below the chart datum.

**END OF SECTION**