

Part 1 General

1.1 REFERENCES

- .1 Justice Canada: Canada Shipping Act - Collision Regulations (C.R.C., c.1416).

1.2 DEFINITIONS

- .1 **Debris:** pieces of wood, wire rope, scrap steel, pieces of concrete and other waste materials.
- .2 **Dredging:** excavating, transporting and disposing of underwater materials.
- .3 **Grade:** plane above which material is to be dredged.
- .4 **Hydraulic Dredging Plant:** equipment that uses the movement of water to excavate and transport underwater materials such as cutter suction dredger, suction dredger or trailing suction hopper dredger.
- .5 **Mechanical Dredging Plant:** equipment comprising of the following: clamshell, dragline, dipper or backhoe dredge with dump scows.
- .6 **Class 1 material:** bedrock which can only be excavated with a heavy duty service excavator, as well as rocks and fragments of at least 1.5 m³ in diameter.
- .7 **Class 2 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 m³.
- .8 **Debris:** materials other than class 2 materials, with a diameter of 1.5 m³ or more.
- .9 **Measurements:**
- .1 CMPM: cubic metres place measurement at dredging site.
- .10 **Lowest Normal Tide (LNT):** plane so low that tide will seldom fall below it.
- .11 **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.
- .12 **Estimated quantity**
- .1 Unless otherwise indicated, it is the volume of materials located above the required depth and within the dredging area, and is expressed in cubic meters.
- .13 **Contaminated soil A-B:** Soils or marine sediments from dredging and with level "A-B" PAH contaminant concentration, according to the generic criteria for soil and ground water, according to the Soil Protection Policy and Rehabilitation of Contaminated Lands of the government of Quebec.
- .14 **Contaminated soil B-C:** Soils or marine sediments from dredging and with level "B-C" PAH contaminant concentration, according to the generic criteria for soil and ground water, according to the Soil Protection Policy and Rehabilitation of Contaminated Lands of the government of Quebec.
- .15 **Chart datum:** the reference level, the low water level in tidal waters, defined by the Canadian Hydrographic Service and from which the samplings or tides level are established.

- .16 **Cleared Area:** dredging area accepted as complying with plans and specifications.

1.3 CHART DATUM, DEPTHS AND TIDAL BENCHMARKS

- .1 The depths and elevation used in these specifications and contract drawings are given in meters in relation to the chart datum.
- .2 All the areas to be dredged must be defined, following the indications, with the vertical tidal benchmarks.

1.4 REGULATORY REQUIREMENTS

- .1 Comply with the codes and municipal, provincial and national regulations concerning this project.
- .2 Mark out floating equipment using navigation lights in accordance with the Collision Regulations and Notices to Mariners.

1.5 SITE

- .1 At the end of this section, the work here includes dredging areas specified according to the plans and the requirements of this section for the installation of new timber cribwork.

1.6 WORK SCHEDULE

- .1 Provide a dredging schedule to the Departmental Representative fourteen (14) days before dredging actually begins.
- .2 Respect the timetable adopted and take immediate action to correct any delays in making the required changes to current dredging work or using additional equipment. Give prior notice to the Departmental Representative of fixes that are needed.

1.7 IMPLEMENTATION CONDITIONS

- .1 Before submitting their bid, the Contractor shall obtain all the necessary information concerning the nature and scope of the work and all the conditions that can influence the execution of such work.
- .2 The results of the most recent known surveys and drilling are included in the contract drawings. The data may differ with the current conditions in the area.
- .3 A summary of the main drilling points is available in Appendix 6. The results of the last survey are shown in the plans with the sole purpose of helping bidders to prepare their bids. It is worth noting that these data may be different from the information recorded on site; this aspect should be taken into consideration in preparing a tender.
- .4 The descriptions of drilling exercises are provided solely to describe the bedrock.
- .5 Take the necessary steps to be familiar with the difficulties that can result in adverse weather and sea conditions in this region.

1.8 CHARACTERISTICS OF SEDIMENT TO BE DREDGED

- .1 The Department has commissioned a firm to carry out environmental checks of sediments in Rivière-au-Renard harbour. The survey took place in spring of 2016. The complete

results of the survey are included in the appendix of tender documents. The following section is a summary of the surveys. The following parameters were analyzed:

- .1 Petroleum hydrocarbons C10-C50
 - .2 HAP
 - .3 BPC
 - .4 TOC (Total Organic Carbon)
 - .5 Metals
 - .6 Humidity
 - .7 Grain size analysis
- .2 The Contractor shall manage soil according to their degree of contamination, in accordance with the Interim excavated contaminated soil Management Grid MDDELCC¹. Following the results of the environmental survey, the following two (2) levels of environmental contamination were elucidated:
1. Contaminated soil, "A-B" range
 2. Contaminated soil, "B-C" range
 3. Contaminated soil, smaller than "A"
 4. Because dredging volumes are moderate, environmental assessment recommends soil management as all dredged sediments are in "B-C" range. If contractor wishes to carry out another management type, for example by separating categories based on an onsite soil analysis, he shall propose with a methodology, which will have to be approved by Department representative.

1.9 SPECIFIC MEASURES DEPENDING ON THE LEVEL OF CONTAMINATION

- .1 Dredging of the whole area
 - .1 The level of contamination of sediments in the whole area falls under "A-B" for PAHs. The Contractor is authorized to manage dredged material under criterion B of the Soil Protection and Contaminated Sites Rehabilitation Policy MDDELCC.
 - .2 The Contractor shall pile up the dredging material inside the unsealed basin so that the dredged materials from the area are physically separated from algae. The material stockpiles should be identified at the site through posters, signs or any other means that enables rapid and accurate identification.
 - .3 The Contractor shall pile up the dredging material inside the unsealed basin so that the dredged materials can dry up before they are transported out of the site.
 - .4 The Contractor shall cover the sediment stockpile inside the watertight basin in the following situations:
 - .1 Unfavourable weather conditions (rain, snow, ice, etc.).
 - .2 Weather conditions that contribute dispersing sediments (strong winds, storms etc.).
 - .3 The absence of activity on the construction site (evenings, weekends, holidays etc.).

¹ http://www.mddelcc.gouv.qc.ca/sol/terrains/politique/tableau_2.htm, consulted on 8 March 2016

- .5 The Contractor shall ensure that the water flowing from the piled dredged material inside the unsealed basin is channelled to a sediment collection device (bales of hay, geotextiles or any other means deemed acceptable by the Departmental Representative).
 - .1 The Contractor shall ensure the proper functioning of the sediment collection device throughout the project.
 - .2 The water flowing from the unsealed basin must be free of sediments or fine particles.
- .6 The Contractor shall remove piled dredged material from the unsealed basin only when their water content is low enough to allow transportation without water or mud flowing from the trucks bin.
- .7 The Contractor shall demolish the unsealed basin when all the dredged material would have been removed from the site. Geotextiles, clear stone, sediment collection device and all materials used in the construction of the unsealed basin will then be managed following the regulations in force.
- .2 Dredging of specific areas
 - .1 The level of contamination of sediments in the some specific areas falls under "B-C" for PAHs. The Contractor is authorized to manage dredged material under criterion B of the Soil Protection and Contaminated Sites Rehabilitation Policy MDDELCC.
 - .2 The Contractor shall pile up the dredging material inside the unsealed basin so that the dredged materials from the area are physically separated from algae. The piles materials should be identified at the site through posters, signs or any other means that enables rapid and accurate identification.
 - .3 The Contractor shall pile up the dredging material inside the unsealed basin so that the dredged materials can dry up before they are transported out of the site.
 - .4 The Contractor shall cover the sediment pile inside the watertight basin in the following situations:
 - .1 Unfavourable weather conditions (rain, snow, ice, etc.).
 - .2 Weather conditions that contribute dispersing sediments (strong winds, storms etc.).
 - .3 The absence of activity on the construction site (evenings, weekends, holidays etc.).
 - .5 The Contractor shall ensure that the water flowing from the piled dredged material inside the unsealed basin is channelled to a sediment collection device (bales of hay, geotextiles or any other means deemed acceptable by the Departmental Representative).
 - .1 The Contractor shall ensure the proper functioning of the sediment collection device throughout the project.
 - .2 The water flowing from the unsealed basin must be free of sediments or fine particles.
 - .6 The Contractor shall remove piled dredged material from the unsealed basin only when their water content is low enough to allow transportation without water or mud flowing from the trucks bins.

- .7 The Contractor shall demolish the unsealed basin when all the dredged material would have been removed from the site. Geotextiles, net stone, sediment collection device and all materials used in the construction of the unsealed basin will then be managed following the regulations in force.

1.10 DREDGING SEQUENCE

- .1 Provide the Departmental Representative with a dredging schedule, as well as the stages.
- .2 The Departmental Representative could then request the Contractor to change the sequence of the areas to be dredged.

1.11 DREDGING EQUIPMENT

- .1 The dredging equipment that will be used for the works should be adequate and in good working condition in order to obtain satisfactory results following the schedule specifications.

Part 2 Products

2.1 MATÉRIEL DE DRAGAGE

- .1 Déterminer le matériel nécessaire pour draguer les matières prescrites et pour évacuer ces matières.

Part 3 Execution

3.1 GENERAL

- .1 Before work begins, the Contractor shall have received a written approval from the Departmental Representative with regard to their deadlines
- .2 Dredging will be done following the limits indicated in the plan.
During the period of work, cover the entire area above the dredging level as shown in the plan.
- .3 The Contractor shall comply with the dredging level, which will be shown to him by the Departmental Representative so as to minimize dredging outside the indicated limits. Any dredging that exceeds the designated area shall be the sole responsibility of the Contractor and carried out at his own expense.
- .4 The Contractor shall dredge with the help of a computer system that is able to properly display on a monitor, the dredging level, the relevant bathymetric data from the work (locations and thickness of materials to be dredged) as well as the dredging size.
- .5 The coordinates of the relevant points to determine the horizontal limits of the dredged areas will be provided by the Departmental Representative.
- .6 The Contractor shall be able to determine by its own means the position of the area to be dredged.
- .7 The Departmental Representative may verify, at his convenience, the accuracy of the positioning systems used by the Contractor.

- .8 All the main intermediary of secondary points (X, Y), (X, Y, Z) and (lat., long.), used by Contractor, determined by himself or provided to him by the Departmental Representative or by someone else, will be under their full responsibility.
- .9 In the course of the contract, all machines must be in good working condition and instantly repaired at all times.
- .10 Demobilization: The Contractor may withdraw his dredging equipment only after receiving permission from the Departmental Representative. Such will only be possible after the final job is considered acceptable.
- .11 Buoys necessary for the contract: The Contractor must, at his own expense, provide, install (wet), and maintain all the buoys or marks required to effectively carry out the contract. If, by chance or by accident, one or more buoys/marks got stuck or went adrift, they would be bailed out and/or recovered at the expense of the Contractor to the satisfaction of the Departmental Representative. The Contractor shall be responsible for any accident caused as a result of poor visibility or position of buoys/marks in the day to their poor lighting at night, or for any other reason.
- .12 Navigation buoys: The Contractor shall not, at any time, remove or move the main navigation buoys. Any justified displacement of one or more buoys will be done by the Department of Fisheries and Oceans Canada; requests for this service should be made to the Departmental Representative at least five (5) business days in advance. The Departmental Representative reserves the right to evaluate the merits of any request from the Contractor on this matter.
- .13 Ensure that all signals and lights remain functional and are compulsorily installed on the equipment used for the work, according to the "Collision Regulations" and the "Safety Regulations in Navigation" on the St. Laurent River. All the equipment needed for work must therefore be properly identified and/or visible at all times.
- .14 Subject to the authorization of the Departmental Representative, no discharge of dredged material will be allowed outside of the land disposal site. The Contractor shall be responsible, when the need arises, for the consequences of not respecting the location for the disposal of dredged materials.
- .15 Mark out the floating equipment with navigation lights in accordance with International Rules of the Routes, and provide radio frequency on board.
- .16 The Contractor shall fill a daily log sheet on their activities. The forms will be provided by the Departmental Representative before work begins.
- .17 Carry out the work such that no damage is caused to fishing vessels and minimize interference with fishing operations in executing operations within the identified areas.
- .18 The Contractor shall be held responsible for any damages if they result from dredging. If damage occurs, take responsibility for the costs of repair or replacement as well as those linked to the loss of fishing opportunities.
- .19 All equipment used must be able to withstand the sea and be in good condition.
- .20 If in the course of the project, the equipment supplied is not suitable enough to perform the task satisfactorily, based on the judgement of the Departmental Representative, or the Contractor is delayed, the Contractor shall, within fifteen (15) days after receiving a written notice from the Departmental Representative on the issue, provide additional equipment that must first be approved by the Departmental Representative.

- .21 Install and maintain tide gauges and water level indicators in order to determine the appropriate depth of dredging. Place the gauges or water level indicators such that they are clearly visible.
- .22 Remove material accumulation resulting from the work at no additional cost to the Crown.
- .23 Remove materials which were transported outside dredging area, as if they were dredged material and evacuate them. Unless the Departmental Representative authorizes it, it is not possible to deposit materials around the area of work.
- .24 Inform the Departmental Representative as soon as you find an object, including boulder or bedrock, which can be classified as debris or obstruction. Bypass the object after clearly marking out the site with buoys manufactured before work begins, inform the Departmental Representative of the MTM coordinates and then continue work.
- .25 Take the necessary measures to protect the existing structures located around the area of work. If necessary, any damage caused by the project shall be repaired at the expense of the Contractor.
- .26 Activities at the wharf shall always be given priority over dredging and unloading.
- .27 Dredging and unloading shall be coordinated alongside other activities at the wharf.
- .28 The area must be kept clean throughout the project.
- .29 No dock activities (unloading, transfer, transportation, handling, etc.) or temporary adjustment can be carried out (or implemented) if there is the likelihood of interference with the users. There should be coordination for these activities to be carried out.

3.2 EXAMINATION

- .1 Verification of location:
 - .1 At the end of this section, the work here includes dredging areas specified according to the plans for the installation of new timber cribwork.

3.3 DISPOSAL OF DEBRIS

- .1 **Do not dispose of debris in open lakes or streams.**
- .2 Dispose of debris in containment facility identified or at approved land disposal site.

3.4 SURVEYS AND ACCEPTANCE OF WORK

- .1 As much as possible, a bathymetric survey will be conducted by the Departmental Representative before the Contractor begins work; otherwise, before dredging, a bathymetric survey will be considered as that provided with the tender documents. Before starting the work, the Contractor shall send a confirmation note to the Departmental Representative informing the latter of the usual checks and accepts the results of the survey. No demands for additional quantities will be accepted for the duration of the contract, that is to say after the acceptance of the survey before dredging.
- .2 The Departmental Representative will conduct one (1) survey after dredging. If the Contractor, for reasons of method or planning, would like make carry out more than one survey after dredging, it will be at his expense, according to the rates mentioned below.

Additional underwater inspections to ensure that dredging has been done to the bedrock will also be at the expense of the Contractor.

- .3 The survey after the laying of the foundation will be done by the Contractor. The survey will be conducted using electronic survey equipment operating in snapshot mode. The survey plan "average instant surveys" conducted at a scale of 1:500 will define the elevation of the foundation in the areas studied. The grid will be 0.5m X 0.5m. The Contractor shall prove that he has reached the levels shown on the plans before the installation of the cribs. This survey must be accepted by the Departmental Representative.
- .4 The Contractor shall submit a formal request, at least five (5) business days in advance so that the after dredging survey can be carried out.
- .5 During bathymetric surveys after dredging, a qualified representative of the Contractor may be present with the team in charge of the survey.
- .6 The Contractor shall be notified of the results of the survey later dredging within four (4) business days after the survey.
- .7 Any additional surveys, the waiting period and the movements of the survey team will be charged to the Contractor on an hourly basis as follows:
 - .1 Normal rate per hour: \$300.00/hour
 - .2 Premium rate per hour: \$400.00/hour
 - .3 The travel time of the survey team are billed at the regular rates per hour, from the home office in Quebec City, in the event where the team is not already mobilized to the site of work at Rivière-au-Renard.
 - .4 Any period which exceeds five (5) days will be considered as a waiting period for the survey team, after the Contractor has notified the Departmental Representative. The waiting period will be recorded by the Departmental Representative on the site, taking eight (8) hours per day, from 8:00 to 16:00. If surveys are required by the Contractor outside of this period, they will also be charged to the Contractor as the waiting period.
 - .5 If surveys are required by the Contractor outside normal office hours, that is Monday to Friday, 8:00 a.m. to 4:00 p.m., they will be charged to the Contractor at a premium hourly rate.
- .8 The Departmental Representative will provide the basic data required for the work (bathymetry before and after dredging) to the Contractor in ASCII digital format (see example in Appendix C); these digital files will be emailed to the Contractor.
- .9 In any case, the bathymetric survey will be carried out in the day. In that way, the Department boat will be moored at wharf at sunset.
- .10 The execution of bathymetric surveys is dependent on climatic conditions.
- .11 The Departmental Representative will not conduct any survey before or after dredging in presence of ice floe. There will be no additional payment for delays caused by such conditions or situations.
- .12 If, after verification surveys, or the following, there were materials above the prescribed level of dredging, or if there are missing materials in the foundation, the Contractor shall return, at his own expense, to the site to complete the work to the satisfaction of the

Departmental Representative. Similarly, if the diving inspection after dredging shows that corrections must be made, the Contractor shall return to the site, at his own expense, to complete the work.

- .13 Subsequent surveys and inspections required after such remedial work shall be charged to the Contractor following the aforementioned rates.
- .14 The final amount payable shall be calculated according to the surveys conducted, by Departmental Representative, before or after dredging.
- .15 For the work acceptance, general cleaning of the premises concerned must be done and the location vacated to the satisfaction of the Departmental Representative.

3.5 LIMITS OF THE AREA OF WORK

- .1 At beginning of work onsite, immediately locate the reference points and take adequate measures to avoid moving these points.
- .2 The Departmental Representative will meet with the Contractor and the surveying staff to determine the horizontal reference parameters established. Coordinate system with geodetic points and determine the vertical reference parameters to define the work and area as well as the tide marks.
- .3 Keep the set horizontal and vertical reference parameters and mark the work area according to these established references. Take responsibility for the accuracy of the work from established references. Supply, install and provide maintenance of the direction-finding and telemetry equipment used to ensure effective control of dredging operations. Provide a survey vessel, equipment and crew needed, and the costs so as to better identify the limits of the dredging area and monitor them.
- .4 The electronic positioning system of the Contractor should be accessible to the Departmental Representative, or his representative, on request. It should automatically update the position continuously in all weather conditions. The minimum position accuracy must be ± 1 m. A graphical display function of the position on-line and hard copy is required. The positioning system must be approved by the Departmental Representative.
- .5 Establish a tidal gauge or scale, and keep it in good condition, to determine the appropriate dredging depth. Place the gauge or scale so that it is clearly visible.
- .6 Establish and keep in good condition temporary sea-marks, benchmarks and additional buoys to locate and correctly define dredging areas designated as required. Remove these items once the work is completed.
- .7 Install buoys, tidal benchmarks and navigational lights, and keep them in good condition, in order to define work areas.

3.6 DREDGING

- .1 Mark out the floating equipment with signalling lights in accordance with Collision Regulations, and ensure a VHF listening service (channel 16) on board the survey vessel.
- .2 Map out the work area according to the tide marks and established work limit. Take responsibility for the accuracy of the work compared to tidal marks. Supply, install and

provide maintenance for the direction-finding and telemetry equipment, laser theodolites and any other piece of equipment usually used to ensure effective control of dredging operations.

- .3 All the areas to be dredged must be defined, following the indications, with the vertical tidal benchmarks.
- .4 Dredge the area to the corresponding level of depth required.
- .5 Dredge the slopes according to information provided.
- .6 Remove the materials that are above the prescribed depth within the specified limits. Dredging materials located below the bottom layer or outside the area or the prescribed lateral slope is not included in this contract.
- .7 Eliminate, at no cost for the Departmental Representative, all high spots caused by an accumulation of materials during the execution of works.
- .8 Remove transported material outside of work area and also remove the dredged material. Do not allow material loss outside area of work without express written permission from the Departmental Representative.
- .9 Remove materials from the dredging areas, before the reception of the area by the Departmental Representative.
- .10 Immediately notify the Departmental Representative of the discovery of any object which may be classified as clutter. Bypass the object after clearly marking it and continue work.

3.7 BLASTING

- .1 Blasting and any other use of explosives is prohibited.

3.8 DISPOSAL OF DREDGED MATERIALS

- .1 Dispose of dredged materials according to applicable regulations.
- .2 Evacuate dredged material to an authorized treatment site.
- .3 The dump truck bins must be sealed to prevent spillage of materials during transportation. Clean up spills as indicated and take the necessary measures to prevent further occurrence.
- .4 Do not allow dredged materials to spill or flow into the river during its disposal.
- .5 Keep pavements and the transfer area clean throughout the contract. Repair the damages caused by the activities of the Contractor, at no extra cost. Leave the surfaces in their original state at the end of the work.

3.9 DREDGING NEAR EXISTING STRUCTURES

- .1 Do not dredge within 2 meters of any existing structure, except plant wharf that is under reconstruction within scope of work.

3.10 DREDGING REMEDIAL

- .1 Carry out dredging remedial work in the areas that do not meet the requirements and check the depths reached by sweeping or additional surveys, to the satisfaction of the Departmental Representative.

3.11 QUALITY CONTROL

- .1 Testing and on-site inspections
 - .1 Cooperate with the Departmental Representative during the work inspection and provide any assistance requested.
 - .2 At the request of the Departmental Representative, provide boats, equipment, labour and usually used materials in dredging facilities, and considered necessary to perform carry out inspection and supervision.
 - .3 Provide adequate boat services to transport the Departmental Representative.
 - .1 At the beginning and end of inspection shifts that take place between sunset and sunrise.
 - .2 When weather conditions are bad and in emergency situations affecting the health and safety of personnel.
- .2 Faulty works
 - .1 If as a result of incomplete work, additional verification of depth levels at random or by scanning the beam is deemed necessary, extra costs will be incurred.
 - .2 Carry out remedial dredging work in the areas that do not meet the requirements and check the depths reached by sweeping or additional surveys, to the satisfaction of the Departmental Representative.

3.12 CLEANING

- .1 Cleaning during project: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave the place clean at the end of each working day.
- .2 Final Cleaning: upon completion remove materials/ excess materials, waste material, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Waste management: Separate recyclable waste materials or dispose of them in accordance with Section 01 74 21 - Management and disposal of construction/demolition waste.
 - .1 Evacuate contaminated sediments according to the applicable regulations , to a disposal facility set up for that purpose.
 - .2 Transport all metals to appropriate recycling facilities, as well as wood and recyclable materials extracted during the cleaning process of the seabed.

END OF SECTION