

PART 1 - GENERAL

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| 1.1 General
<u>Description</u> | .1 | This section specifies requirements for excavating Class "B" underwater materials in areas indicated, and for transporting and disposing of excavated materials at specified locations. |
| | .2 | The dredge depths are approximately 2.0 metres below Chart Datum, and disposal sites are shallow (usually from 0.0/+1.0 m to 3.0 m deep), and approximately 250-300 metres from the dredge site. |
| 1.2 Related
<u>Sections</u> | .1 | Section 01 35 43 - Environmental Procedures
Section 01 35 30 - Health and Safety |
| 1.3 Measurement
<u>Procedures</u> | .1 | Only material excavated above grade plane and within side slopes indicated or specified will be measured. |
| | .2 | Mobilization and Demobilization: Mobilization and demobilization of the dredge(s), support vessels and pipeline to be paid as a fixed lump sum payment covering all items of work. This item will be measured each time a call-up is made under the standing offer, regardless of the method of measurement used for the dredging. Half of the sum allocated for mobilization and demobilization, shall be payable upon commencement of dredging and the remainder shall be payable after project completion.
.1 Moving off the channel to accommodate fishing vessels is incidental to the work, and will not be measured.
.2 Mobilization and demobilization will not be paid if the dredge and pipeline have not been demobilized from the site between call ups.
.3 Any remediation to prevent the possible transport of alien species from port to port will be included in the demobilization costs. See Environmental Protection Section 01 35 44.
.4 Multiple Dredging equipment used to increase production is paid as a single mobilization. |
| | .3 | Dredging (Per Day): The measurement for payment for dredging is per day |
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1.3 Measurement
Procedures
(Cont'd)

- .3 Dredging (Per Day):(Cont'd)
- .1 Per day basis is based on 10 hours of actual productive dredging within grades & limits identified. This includes the supply of all plant, equipment and labour to perform the dredging.
- .2 The call up will be of a minimum of one day.
- .3 Dredging equipment is catagorized based on evaluated production rates.
- .4 Any combination of dredges may be used to meet the production rate.
- .4 **Dredging (CMPM):** will be measured in cubic metres, in-place measurement (CMPM), determined from soundings taken before and after dredging. For purpose of quantity computation, existing seabed elevation will be represented by "Average" sounding for each matrix block of survey by Departmental Representative as soon as practical after Contract award. Post dredging elevation for quantity computations will be "Average" of sounding for each matrix block.
- .1 Minimum call up will be 500 CMPM.
- .5 **Square metres (SQM):** Some dredging will be measured by the square metre (box cut)over the area of work completed to the specified cut. Side slopes are not measured for payment, but in the calculation of the area it must be considered that the side slope will either be shaped or will fall to two horizontal to one vertical. Prices for two depths of cuts will be considered:
- .1 Cut 800 mm or less
- .2 Cut 800 mm to 1600 mm

These depths of cuts are considered to be "average cuts" across the cross section of the channel. Average cut will be calculated by adding the difference between the sounded depth and desired grade of equi-distant points on a cross section, and dividing by the number points measured on the cross section. The Engineer with the assistance of the Contractor will establish the average depth of cut prior to dredging. Any dispute about the calculation of the average cut will have to be settled prior to the start of the dredging, otherwise the number use in the call-up will be applied for payment.

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- 1.3 Measurement Procedures (Cont'd)
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- .5 Square metres (SQM):(Cont'd)
.3 Minimum call up will be 500 SQM.
- .6 **Pumping in excess of 501 metres to 1,000 metres:** There will be an additional premium paid per day for the disposal of dredge material by pipeline between 501 to 1,000 metres from the dredge site.
- .7 Dredging equipment used for removal of obstructions will be paid for at rate negotiated in advance and authorized in writing by Engineer.
- .8 All operations in connection with field positioning of dredging equipment will not be measured separately for payment.
- .9 No separate payment will be made for Contractor's survey vessel, equipment and crew or diving services.
- .10 Payment will include disposal of dredge material to the ocean disposal site or confined disposal facility.
- .11 There will be no additional payment for delays incurred during fishing seasons, weather, during periods when no dredging is permitted.
- .12 There will be no additional payment for downtime and for delays caused by vessel traffic.
- .13 Removal of infilling material will not be measured for payment.
- .14 There will be no additional payment for any accumulation of sea weeds and/or kelp which may hamper the dredging operation.
- .15 There will be no additional payment for mooring facilities fees for dredge plant.
- 1.4 Definitions
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- .1 Dredging: excavating, transporting and disposing of underwater materials.
- .2 Class A material: solid rock requiring drilling and blasting to loosen, and boulders
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| 1.4 Definitions
(Cont'd) | .2 | Class A material:(Cont'd)
or rock fragments of individual volumes 1.5 m ³
or more. |
| | .3 | Class B material: loose or shale rock, silt,
sand, quick sand, mud, shingle, gravel, clay,
sand, gumbo, debris, hardpan, and boulders of
individual volumes less than 1.5 m ³ . |
| | .4 | Obstructions: material other than class A,
having individual volumes of 1.5 m ³ or more. |
| | .5 | CMPM: cubic meters place measurement. |
| | .6 | SQM: Square metres, area in square metres
projected horizontal. |
| | .7 | Debris: pieces of wood, wire rope, scrap
steel, pieces of concrete and other waste
materials. |
| | .8 | Grade: plane above which material is to be
dredged. |
| | .9 | Estimated quantity:
.1 Volume of material calculated to be
above sub grade and within specified side
slopes unless otherwise specified.
.2 Areas in square metres of material
calculated horizontally above grade and within
dredge limits, not including side slopes. |
| | .10 | 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. |
| | .11 | Chart Datum: permanently established plane
from which soundings or tide heights are
referenced, usually Lowest Normal Tide
(L.N.T.). |
| | .12 | Coordinates:
.1 U.T.M.: universal transverse mercator
projection.. |
| | .13 | Minimum Sounding: Shallowest depth recorded
inside a matrix block. Soundings taken in this
mode may be shallower than actual bottom
elevations due to variations in water depths
due to wave action. |

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- 1.4 Definitions (Cont'd)
- .14 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 1 to several soundings contained within it.
 - .15 Minimum Sounding Plan: hydrographic survey plan in which the minimum Sounding is plotted for every matrix block.
 - .16 Average Sounding: Average depth of all soundings recorded within a matrix block.
 - .17 Average Plan: Average depth of all soundings recorded within a matrix block
 - .18 Lowest Normal Tide (L.N.T.): plane so low that tide will seldom fall below it.
 - .19 Cleared Area: area of dredging accepted as complying with plans and specifications.
- 1.5 Submittals
- .1 The Contractor will complete and submit a copy of Appendix "C" with his tender which will list all materials and equipment the Contractor proposes to use under this standing offer. Prior to award, the Departmental Representative will review the capabilities of the Contractor to perform the work.
 - .2 Submit to Departmental Representative, within two days of a request for dredging, a schedule of work including time periods during which each operation involved in work will be undertaken up to final completion.
 - .3 Submit to Departmental Representative, within two days of a request for dredging, a site specific safety plan. This plan is to have emergency numbers and contacts specific to Harbour Authoriy, property owners (Parks Canada) emergency response, and operators of water intakes.
 - .4 For projects paid by the day, submit to Departmental Representative prior to dredging a sketch showing existing condition of channel with soundings reduced to Chart datum and plotted on approximate 15 m by 15 m grid.
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<u>1.5 Submittals (Cont'd)</u>	.5	For projects paid by the day, submit to Departmental Representative upon completion a daily log of activities related to dredging, including a sketch showing post dredging or cleared areas as reduced to Chart datum and plotted on approximate 15 m by 15 m grid.
<u>1.6 Regulatory Requirements</u>	.1	Mark floating equipment with lights in accordance with Regulations for the Prevention of Collisions.
<u>1.7 Waste Management and Disposal</u>	.1	Metals, wood and recyclable materials removed during the dredging activities must be diverted appropriate recycling facilities.
<u>1.8 Interference to Navigation and Fishing</u>	.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, marina operations, 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 District Manager, Canadian Coast Guard, Fisheries and Oceans, informed of dredging operations in order that necessary Notices to Mariners will be issued.
	.4	Become familiar with fishery activity. Clearly mark dredging area(s), disposal area(s) and routes to and from dredging and disposal area, during periods when fishing gear is set in areas adjacent to dredging operations with "Cautionary Buoys", in accordance with Coast Guard Standard TP968-1984. All Buoys must be colored cautionary yellow - CGSB #505-108. The Contractor is responsible for all costs associated with the supply, installation and removal of all necessary temporary aids.

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1.8 Interference to .5 Execute the work to ensure damage does not
Navigation and occur to fishing gear and interference to
Fishing fishing operations is minimized, by conducting
(Cont'd) operations within the areas so marked.

.6 Be responsible for damage to fishing gear
from dredging activities outside marked areas
and, if damage occurs, assume responsibility
for replacement or repair costs and cost of
lost fishing opportunity.

1.9 Datum, Water .1 Elevations used in this specification and
Gauges and Targets contract drawings are in metres referred to
Chart 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, Marine Directorate. Submit
this certificate with equipment information.

.2 Requests for certification in format of
attached questionnaire to be directed to
Senior Director, Marine, Energy and Marine
Branch, Marine Directorate, Industry Canada,
235 Queen Street, Ottawa, Ontario, K1A 0H5,
and to be received there not less than 14 days
prior to tender closing.

.3 The Contractor shall determine the equipment
required to dredge the material specified. The
material to be dredged is as described in
Paragraph 1.1 of this Section.

1.11 Inspection of .1 Contractor to visit site of Work and become
Site thoroughly familiar with extent and nature of
Work and conditions affecting Work before
tendering.

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| <u>1.12 Site Information</u> | .1 | Take necessary steps to become fully familiar with potential inclement weather and sea conditions in this area. |
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| <u>1.13 Survey Requirements</u> | .1 | The Contractor shall provide, at his expense, a survey vessel for equipment and crew to set up and maintain control for the location of dredge limits and to sound areas, immediately after dredging, to verify that grade depth has been attained. |
| | .2 | The contractor is to provide at his expense a GPS unit with differential corrected position, with accuracy less than three (3) metres. |
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| <u>1.14 Surveys and Acceptance of Work</u> | .1 | For projects with method of payment of cubic metre place measure, as soon as practical after Contract award, Departmental Representative will complete pre-dredge survey of all dredge area locations. Survey will be by electronic survey equipment sounding in Average mode. Survey plan at 1:500 scale plotting average soundings obtained in this survey will define actual pre-dredge seabed areas. |
| | .2 | No area will be dredged prior to Departmental Representative's 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 equipment. Survey plan at 1:500 plotting "average" 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. |
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| 1.14 Surveys and
Acceptance of Work
(Cont'd) | .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 | After dredging soundings will be taken by the Departmental Representative upon completion of the Contractor's dredging and no dredge area shall be determined complete until after it has been cleared to the specified grade depth or until so directed by the Departmental Representative in the case of measurement on a per day basis. In the case of measurement on a per day basis, the clearance of the dredge site/call-up may also be done by the PWGSC representative on site in lieu of an electronic survey. In such case provide assistance to the Departmental Representative in the verification of dredged depth. |

PART 2 - PRODUCTS

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| 2.1 Dredging
Equipment | .1 | Contractor to determine required equipment necessary to dredge material specified and to dispose of dredged material at locations indicated. |
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PART 3 - EXECUTION

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| 3.1 Layout of
Work | .1 | The contractor will layout the work based on sketches provided by the Departmental Representative, taking into account the dynamics of the sand bars which may change from what is depicted on surveys or a sketch. Similarly the disposal site may change location. (usually on top of the offshore sand bar) |
| | .2 | Install pins at the corners of the dredging area to be dredged. When dredging under square metre measurement, install pins where average cut changes as per measurement of payment. |
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3.1 Layout of
Work
(Cont'd)

- .3 For gully dredging and in channels far from land references, use Global Positioning System (GPS), differential corrected, instrumentation valid at 3.0 metre accuracy. Record position of pins in UTM co-ordinates. At the earliest opportunity, forward these to PWGSC Departmental Representative for verification. The contractor is responsible to ensure GPS instrumentation is verified for accuracy every three months.
- .4 Positions of pins may be verified in the field by PWGSC.

3.2 General

- .1 Mark floating equipment with lights in accordance with International Rules of Road and maintain radio watch on board.
- .2 Place and maintain buoys, pins, ranges, markers and lights required to define work and disposal areas.
- .3 Lay out Work from bench marks ranges and base lines established by Departmental Representative. Be responsible for accuracy of Work relative to established bench marks ranges 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 tide boards in order that proper depth of dredging can be determined. Locate tide boards so as to be clearly visible.
- .5 Dredge side slopes to two horizontal to one vertical.
- .6 Remove materials above specified grade depths, within limits indicated. Material removed from below subgrade depth or outside specified area or side slope is not part of Work.
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| 3.2 General
<u>(Cont'd)</u> | .7 | Remove shoaling which occurs as result of Work at no expense to Departmental Representative. |
| | .8 | Remove infilling in dredge areas which occurs prior to acceptance by Departmental Representative. |
| | .9 | Immediately notify Departmental Representative upon encountering object which might be classified as obstruction. By-pass object after clearly marking its location and continue Work. |
| 3.3 Disposal of
<u>Dredged Material</u> | .1 | Dispose of dredged material by depositing in disposal areas in manner approved by Departmental Representative. |
| | .2 | Define area of disposal site with marker buoys and maintain minimum depth of water of 0.0m below Chart Datum at disposal site. |
| | .3 | Disposal of dredged material will be carried out in accordance with the terms and conditions set down in permits issued by Environment Canada pursuant to the Canadian Environmental Protection Act and Regulations there under. |
| | .4 | The disposal site may shift from actual co-ordinates and must be related to physical features found at the site. Disposal sites are commonly located along the offshore sand bars, and these are to be located by soundings and the pipeline repositioned if required. Record GPS position of the pipeline outfall and submit to Departmental Representative. |
| 3.4 Dredging in
<u>Vicinity of Structures</u> | .1 | Do not dredge material from areas lying within 1.0 m of existing structure unless authorized by Departmental Representative. |
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| <u>3.5 Re-dredging</u> | .1 | Re-dredge unsatisfactory Work and verify depths with additional sounding to approval of Departmental Representative. |
| <u>3.6 Co-operation and Assistance to Departmental Representative</u> | .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. |