

ZEBALLOS DREDGING 2017

FISHERIES AND OCEANS CANADA
SMALL CRAFT HARBOURS – PACIFIC REGION

200 – 401 Burrard Street
Vancouver, British Columbia
V6C 3S4



Section Number	Section Title	No. of Pages
Section 00 00 00	TITLE PAGE	1
Section 00 01 10	TABLE OF CONTENTS	1
Section 01 11 00	SUMMARY OF WORK	5
Section 01 14 00	WORK RESTRICTIONS	2
Section 01 41 00	REGULATORY REQUIREMENTS	1
Section 01 35 43	ENVIRONMENTAL PROCEDURES	4
Section 01 45 00	QUALITY CONTROL	2
Section 35 20 23	DREDGING	7
Section 01 35 29.06	HEALTH AND SAFETY REQUIREMENTS	4
Drawing Number	Drawings Title	No. of Pages
DRAWINGS		
721598-003-004-A	ZEBALLOS DREDGE PLAN	1
REFERENCE MATERIAL	Document Title	
	BATHYMETRIC SITE PLAN OF ZEBALLOS BOAT BASIN ZEBALLOS, BC	1
	ZEBALLOS SEDIMENT ANALYSIS	95

END OF SECTION



Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 14 00 WORK RESTRICTIONS
- .2 Section 01 41 00 REGULATORY REQUIREMENTS
- .3 Section 01 35 43 ENVIRONMENTAL PROCEDURES
- .4 Section 01 45 00 QUALITY CONTROL
- .5 Section 35 20 23 DREDGING
- .6 Section 01 35 29.06 HEALTH AND SAFETY REQUIREMENTS

1.2 DEFINITIONS

- .1 Throughout contract documents, the words “Owner,” “Contracting Authority,” “Harbour Authority,” “Engineer/Departmental Representative,” “Contractor,” or “Department,” shall be defined as follows:
 - .1 Owner and Technical Authority: Small Craft Harbours Program of the Department of Fisheries and Oceans, 200-401 Burrard Street Vancouver B.C. V6C 3S4
 - .2 Harbour Authority: Zeballos Harbour Authority, Box 42, 125 Maquinna Ave, Zeballos BC V0P 2A0, Canada.
 - .3 Engineer/Departmental Representative: An employee of the Owner or Engineer assigned by the Owner as the Engineer for this project, or the Engineer’s representative assigned by the Engineer as his representative for the project.
 - .4 Contractor: The party accepted by the Owner with whom a formal contract is entered to complete the work of this project.
 - .5 Department: The Department of Fisheries and Oceans, Canada.

1.3 DRAWINGS

721598-003-004-A ZEBALLOS DREDGE PLAN

1.4 PROJECT SITE

- .1 The Zeballos Small Craft Harbour (The Project Site) is located at the end of Maquinna Ave in the Village of Zeballos, on the north west coast of Vancouver Island about 180 km north west of Port Alberni, B.C



1.5 WORK COVERED BY CONTRACT DOCUMENTS

- .1 Work covered in this section comprises the dredging and disposal of Class B material with the use of floating equipment.

1.6 COMMENCEMENT AND COMPLETION

- .1 The work must be carried out during the following periods of least risk to fish: July 1 to August 15, 2017; and December 1, 2017 to February 15, 2018

1.7 DESCRIPTION OF WORK

The items described will be used to complete dredging at Zeballos harbour.

.1 Mobilization/Demobilization

The lump sum cost for this this contract shall include the supply of materials, equipment, tools, services, labour and all things necessary to complete the following:

- .1 This item includes the lump sum cost for mobilization and demobilization including moving all crew, equipment and material on and off the site and site clean-up after completion of the work.
- .2 All crew living expenses and other associated costs.
- .3 Any overhead costs not covered in other items.
- .4 Site clean-up.

.2 Dredging of "Class B" Material

The unit rate cost per cubic metre for this item includes all labour, equipment, and material to complete the following:

- .1 Dredge and remove 700 cubic meters "Class B" material as per drawings and specifications. Note: all floats will remain in place. There will be no dredging under the float lines.
- .2 The Contractor shall provide a full height isolation barrier (e.g., silt curtain). The isolation barrier will be installed to isolate the dredge area from adjacent areas that contain eelgrass beyond the dredge footprint.

.3 Disposal of "Class B" Material

The unit rate cost per cubic metre for this item includes all labour, equipment, and material to complete the following:

- .1 Transport and dispose 700 cubic meters of "Class B" material.
- .2 Dredge material shall be disposed of by the Contractor off-Site, at an upland location in accordance with applicable regulations.
- .3 Material is not suitable for disposal at sea.

1.8 WORK SEQUENCE

- .1 Owner to move vessels out of work area, as required, prior to start of construction.



- .2 Contractor to provide a minimum 7-day notice to the Owner and receive a written response from Owner, that existing vessels have been relocated prior to mobilization to site.
- .3 Co-ordinate Progress Schedule and co-ordinate with Owner Occupancy during construction.
- .4 Co-operate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.

1.9 CONTRACTOR USE OF PREMISES

- .1 Co-ordinate use of premises under direction of Owner.
- .2 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.
- .3 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Engineer.
- .4 At completion of operations condition of existing work: equal to or better than that which existed before new work started.
- .5 The Contractor shall obey all navigation regulations and conduct operations so as to interfere as little as possible with the use of berthing spaces, fairways and passages. Install and maintain any and all protection to navigation as may be required by any properly constituted authority or by the Engineer. During the course of construction and cleanup, do not dispose of surplus, waste or demolished materials in navigable waters.
- .6 The Contractor shall upon instruction of the Owner or Engineer, promptly remove any of the Contractor's equipment located outside the specified work area and obstructing any harbour operation.

1.10 OWNER OCCUPANCY

- .1 Owner will occupy premises during entire construction period for execution of normal operations.
- .2 Co-operate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.

1.11 OWNER FURNISHED ITEMS

- .1 The Owner will not furnish any items.

1.12 EXISTING SERVICES

- .1 Notify, Engineer and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, give Engineer 48 hours notice for necessary interruption of mechanical or electrical service throughout course of work. Minimize duration of interruptions. Carry out



work at times as directed by governing authorities with minimum disturbance to tenant operations.

- .3 Establish location and extent of service lines in area of work before starting Work. Notify Engineer of findings.
- .4 Submit schedule to and obtain approval from Owner for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.
- .5 Provide temporary services when directed by The Engineer to maintain critical building and tenant systems.
- .6 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.
- .7 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.
- .8 Record locations of maintained, re-routed and abandoned service lines.
- .9 Construct requisite barriers, fences, warning signs, lights and watching for the protection of persons and property on or adjacent to the site.

1.13 DOCUMENTS REQUIRED

- .1 Maintain at job site, one copy each document as follows:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Reviewed Shop Drawings.
 - .5 List of Outstanding Shop Drawings.
 - .6 Change Orders.
 - .7 Other Modifications to Contract.
 - .8 Field Test Reports.
 - .9 Copy of Approved Work Schedule.
 - .10 Health and Safety Plan and Other Safety Related Documents.
 - .11 All regulatory permits required for the work.
 - .12 Associated Best Management Practices documentation.

Part 2 Products

2.1 NOT USED

- .1 Not used.



Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION



Part 4 General

4.1 RELATED SECTIONS

- .1 Section 01 11 00 SUMMARY OF WORK
- .2 Section 01 41 00 REGULATORY REQUIREMENTS
- .3 Section 01 35 43 ENVIRONMENTAL PROCEDURES
- .4 Section 01 45 00 QUALITY CONTROL
- .5 Section 35 20 23 DREDGING
- .6 Section 01 35 29.06 HEALTH AND SAFETY REQUIREMENTS

4.2 ACCESS AND EGRESS

- .1 Design, construct and maintain temporary "access to" and "egress from" work areas, including stairs, runways, ramps or ladders, independent of finished surfaces and in accordance with relevant municipal, provincial and other regulations.

4.3 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with the Departmental Representative to facilitate work as stated.
- .2 The Contractor shall obey all navigation regulations and conduct operations so as to interfere as little as possible with the use of the berthing spaces, fairways and passages. Install and maintain any and all protection to navigation as may be required by any properly constituted authority or by the Departmental Representative. During the course of construction and clean up, do not dispose of surplus, waste, or demolished materials in the waters.
- .3 Maintain existing services to the harbour facilities and provide access for personnel, vessels and vehicle.
- .4 Where security is reduced by work provide temporary means to maintain security.
- .5 The Contractor shall supply for their own use; sanitary, first aid, and all other temporary services and facilities required for the work.
- .6 The Site is operated by the Zeballos Harbour Authority, a third-party entity from the site Owner. The Contractor is required to coordinate the work with the Harbour Authority, including temporary use/closure of the site for work equipment, material and machinery storage, temporary services for construction, and so on in order to complete the work. Agreement with the Harbour Authority is required.



4.4 EXISTING SERVICES

- .1 Notify Departmental Representative and utility companies of intended interruption of services and obtain required permission if required.
- .2 Where work involves breaking into or connecting to existing services, give Departmental Representative and Zeballos Harbour Authority minimum forty-eight (48) hours of notice for necessary interruption of mechanical or electrical service throughout course of work. Keep duration of interruptions at a minimum. Carry out interruptions after normal working hours of occupants if possible, as approved by Departmental Representative and the Harbour Authority.
- .3 Provide access for pedestrian, vehicular and marine traffic.

4.5 SETTING OUT OF WORK

- .1 Ensure that Contractor personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.
- .2 Keep within limits of work and avenues of ingress and egress.
- .3 The Contractor shall provide all requisite barriers, fences, warning signs, lights and watching for the protection of persons and property on or adjacent to the site.
- .4 The Contractor shall normally perform all work in eight (8) hours per day, within the hours of daylight between 07:00 and 17:00 according to local by-law; unless otherwise approved by Departmental Representative and Zeballos Harbour Authority.
- .5 The Contractor shall keep proper illumination each night between hours of sunset and sunrise upon all floating plant and false-work, upon all arranges and other stakes where necessary, upon all buoys of such size and such locations as required by a governing authority.
- .6 All heavy equipment shall be free of leaks and cleaned prior to construction. The Contractor shall have absorbent pads on site in case of any oil leaks or contaminants entering the water.

4.6 SECURITY CLEARANCES

- .1 Personnel employed on this project may be subject to security check. Obtain clearance, as instructed, for each individual who will require to enter the premises. DFO is not responsible for the clearances of the Contractor.

END OF SECTION



Part 5 General

5.1 RELATED REQUIREMENTS

- .1 Section 01 11 00 SUMMARY OF WORK
- .2 Section 01 14 00 WORK RESTRICTIONS
- .3 Section 01 35 43 ENVIRONMENTAL PROCEDURES
- .4 Section 01 45 00 QUALITY CONTROL
- .5 Section 35 20 23 DREDGING
- .6 Section 01 35 29.06 HEALTH AND SAFETY REQUIREMENTS

5.2 REFERENCES AND CODES

- .1 Perform Work in accordance with Fisheries Act, Disposal at Sea Regulations, Navigable Waters Protection Act, and all other applicable federal, provincial and local regulations. including addendums up to tender closing date and other, provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
- .2 Meet or exceed requirements of:
 - .1 Contract Documents.
 - .2 Specified standards, codes and referenced documents.

5.3 REGULATORY REQUIREMENTS

- .1 Underwater work shall be conducted in consultation with DFO officer due to fish habitat/herring conversation window, unless otherwise approved by Ecosystem Management Branch, Fisheries and Oceans.

END OF SECTION



Part 6 General

6.1 RELATED REQUIREMENTS

- .1 Section 01 11 00 SUMMARY OF WORK
- .2 Section 01 14 00 WORK RESTRICTIONS
- .3 Section 01 41 00 REGULATORY REQUIREMENTS
- .4 Section 01 45 00 QUALITY CONTROL
- .5 Section 35 20 23 DREDGING
- .6 Section 01 35 29.06 HEALTH AND SAFETY REQUIREMENTS

6.2 REFERENCES

- .1 Definitions:
 - .1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humans; or degrade environment aesthetically, culturally and/or historically.
 - .2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction.

6.3 POLLUTION CONTROL

- .1 Control emissions from equipment and plant in accordance with local authorities' emission requirements.
- .2 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area.

6.4 NOTIFICATION

- .1 Engineer will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan.
- .2 Contractor: after receipt of such notice, inform Engineer of proposed corrective action and take such action for approval by Engineer.
 - .1 Take action only after receipt of written approval by Engineer
- .3 Engineer will issue stop order of work until satisfactory corrective action has been taken.
- .4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.



Part 7 Products

7.1 NOT USED

- .1 Not Used.

Part 8 Execution

8.1 DREDGING

- .1 The following general mitigation measures will be incorporated into the Project:
 - .1 An environmental monitor will be provided at the Owners expense and will be present onsite full-time during the project when in-waterworks is occurring;
 - .2 The environmental monitor will have the authority to stop works if environmental measures are not effective in preventing unauthorized harm to fish or fish habitat;
 - .3 The work will be planned such that no dredging will occur outside the least-risk work windows of July 1 to August 15 and December 1 to February 15, to reduce the potential for impact to salmon and herring;
 - .4 All dredge material shall be disposed of by the Contractor off-Site, at an upland location in accordance with applicable regulations.
 - .5 Equipment (e.g., heavy machinery) used in and around water will be kept clean and in good working condition (i.e., free of leaks, excess oil, and grease);
 - .6 Dredging will be focuses on areas that are most critical to reduce the overall footprint and impact on adjacent eelgrass beds;
 - .7 Barge securement (i.e., via spuds) will be restricted to areas within the harbour lot;
 - .8 The scow will not be overloaded;
 - .9 Grounding of equipment/ machinery on the bottom will be avoided to prevent further sediment mobilization or disturbance to the seabed; barges will be tied to the existing wharf or held in place with spuds;
 - .10 Noise and vibration will be kept under 206 dB re 1 μ Pa and an accumulative sound exposure level (SEL_{cum}) of 187 dB re 1 μ Pa²-s for fishes.
 - .11 Noise and vibration will be kept under 160 dB re: 1uPa (RMS for repetitive activities) for the disturbance threshold of marine mammals.
 - .12 Activities will be ceased if any marine mammal is observed within the exclusion zone, and only resume once the animal has left the exclusion zone or has not been re-sighted for 30 minutes. No marine mammal monitoring program or associated exclusion zone will be required for other in-water activities. However, activities will be ceased if any marine mammal is observed immediately adjacent to the activity such that there is a risk of physical harm from direct contact, and only resume once the animal has left the immediate area or has not been re-sighted for 30 minutes



- .13 Prior to the commencement of the works, the perimeter of the dredge area will be clearly identified by Departmental Representative to avoid additional potential impact to adjacent areas; the contractor will be responsible for staying within the Site boundaries;
- .14 Material shall not be “double-handled” on the sea bed;
- .15 The Contractor shall develop a methodology for controlling barge dewatering and runoff. The plan must include:
 - .1 Having dewatering activities occur within a full-height isolation barrier;
 - .2 Dewatering must occur either within the dredge footprint, or, at an upland location;
 - .3 Dewatering must not compromise water quality criteria described below.
- .16 The Contractor shall provide a full height isolation barrier (e.g., silt curtain). The isolation barrier will be installed to isolate the dredge area from adjacent areas that contain eelgrass beyond the dredge footprint. The contractor will be responsible for developing the methodology. Requirements will include:
 - .1 The isolation barrier (e.g. silt curtain) on the east and north perimeter of the proposed dredge area must be anchored to the seabed, and the full height of the water column at high tide;
 - .2 The isolation barrier will be designed in such a way that it is functional for construction purposes to proceed with low probability of malfunction;
 - .3 The adjacent eelgrass will be monitored by Departmental Representative during dredging/dewatering for sediment deposition;
 - .4 The Contractor shall replant any disturbed eelgrass areas outside of the isolation barrier. These areas will be checked by divers during a post-construction as-built survey after completion of dredging activities.
 - .5 The isolation barrier shall be maintained and repaired by the Contractor to maintain water quality values described below. The works will be stopped when water quality exceeds these values.
- .17 Water quality criteria to be checked at the monitoring station will conform to the following:
 - .1 20 NTU above background.
 - .2 Under low flows, the maximum increase of 25 mg/L from background levels for any short-term exposure (e.g., 24-h period). Maximum average increase of 15 mg/L from background levels for longer term exposures (e.g., inputs lasting between 24 h and 30 d).
 - .3 Under high flows, the maximum increase of 25 mg/L from background levels at any time when background levels are between 25 mg/L and 250 mg/L. Should not increase more than 10% of background levels when background level > 25 mg/L



- .4 Monitoring for both turbidity in NTU and TSS will be carried out by departmental Representative.
- .5 If turbidity and/or TSS measurements exceed the criteria described above, sediment deposition will be monitored by Departmental Representative daily at each of the monitoring stations. If deposition exceeds 1 cm, works will be stopped to prevent smothering of adjacent eelgrass beds and an underwater assessment of the adjacent eelgrass beds shall be carried out at the Contractors expense to determine if they have been harmed and require replanting. Mitigation measures, such as inspecting silt curtain for functionality, and the implementation of additional measures or modifications of work procedures will be employed prior to work commencing. DFO will also be notified within 24 hours.

8.2 CLEANING

- .1 Leave Work area clean at end of each day.
- .2 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.
- .3 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment to approval of the Owner.

END OF SECTION



Part 9 General

9.1 RELATED REQUIREMENTS

- .1 Section 01 11 00 SUMMARY OF WORK
- .2 Section 01 14 00 WORK RESTRICTIONS
- .3 Section 01 41 00 REGULATORY REQUIREMENTS
- .4 Section 01 35 43 ENVIRONMENTAL PROCEDURES
- .5 Section 35 20 23 DREDGING
- .6 Section 01 35 29.06 HEALTH AND SAFETY REQUIREMENTS

9.2 REFERENCES

- .1 Construction General Conditions

9.3 INSPECTION

- .1 Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals.
- .3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .4 Departmental Representative will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction.

9.4 ACCESS TO WORK

- .1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.
- .2 Co-operate to provide reasonable facilities for such access.

9.5 PROCEDURES

- .1 Notify appropriate in advance of requirement for tests, in order that attendance arrangements can be made.
- .2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.
- .3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.



9.6 REJECTED WORK

- .1 Refer to Construction General Conditions for stipulated interpretation.
- .2 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .3 Make good other Contractor's work damaged by such removals or replacements promptly.
- .4 If in opinion of Owner it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by The Engineer.

9.7 REPORTS

- .1 Submit 4 copies of inspection and test reports to Owner

Part 10 Products

10.1 NOT USED

- .1 Not Used.

Part 11 Execution

11.1 NOT USED

- .1 Not Used.

END OF SECTION



Part 12 General

12.1 RELATED SECTIONS

- .1 Section 01 11 00 SUMMARY OF WORK
- .2 Section 01 14 00 WORK RESTRICTIONS
- .3 Section 01 41 00 REGULATORY REQUIREMENTS
- .4 Section 01 35 43 ENVIRONMENTAL PROCEDURES
- .5 Section 01 45 00 QUALITY CONTROL
- .6 Section 01 35 29.06 HEALTH AND SAFETY REQUIREMENTS

12.2 MEASUREMENT PROCEDURES

- .1 Only material excavated below existing seabed elevation and above proposed sub-grade dredge elevation within side slopes indicated or specified will be measured.
- .2 Dredged volumes will be displacement-measured on the barge.
- .3 Post dredging elevations for quantity computations will be shallowest of grade, bedrock or "Average of Instantaneous" sounding for each matrix block. The post dredging soundings will be performed by Departmental Representative to confirm the work according to the specifications.
- .4 The Contractor shall propose dredging, transportation and disposal methodology in compliance with approved permits and approvals for such work.
- .5 Obstructions.
 - .1 Removal of obstructions, if any, authorized by Departmental Representative will be measured in hours actually used in removal.
 - .2 Labour and dredging equipment used for removal of obstructions will be paid for at rate submitted with unit prices as a contingency.
- .6 All operations in connection with field positioning of dredging equipment will not be measured separately for payment.
- .7 No separate payment will be made for Contractor's survey vessel, equipment, crew, survey or diving services, board, lodging and transportation of the Contractor's personnel and sub-Contractors. These costs shall be incorporated into his prices.
- .8 Payment will include dredging operation, dredge material handling and transportation, and disposal of dredge material.
- .9 There will be no additional payment for delays incurred during periods when no dredging is permitted.
- .10 There will be no additional payment for downtime and for delays caused by vessel traffic.



- .11 Mobilization and demobilization of dredging equipment to be lump sum.
- .12 No separate payment will be made for sweeping.

12.3 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 m³ 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 m³.
- .4 Obstructions: material other than Class A, having individual volumes of 1.5 m³ or more.
- .5 CPM: cubic meters 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 associated with site operation.
- .7 Grade: plane above which material is to be dredged.
- .8 Sub-grade: plane parallel to and 250 mm below grade.
- .9 Estimated Quantity: Volume of material calculated to be above dredge limits and within specified side slopes unless otherwise specified.
- .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.
 - .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.
- .13 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.
- .14 Matrix Block: each dredge area is presented as number of 5 x 5 m long blocks. Dependent on position of sounding, block may have two (2) to four (4) soundings contained within it.



- .15 Least of Minimum Plan: hydrographic survey plan in which least sounding in grouping of matrix blocks is plotted.
- .16 Instantaneous Mode: mode of operation of hydrographic survey equipment where only sounding observed at predetermined distance interval is retained in memory.
- .17 Average of Instantaneous Plan: hydrographic survey plan in which average sounding in appropriate grouping of matrix blocks is plotted.
- .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.

12.4 SUBMITTALS

- .1 Submit to Departmental Representative the proposed methodology of dredging and transportation of material to disposal site. Required regulatory approvals or permits, other than the habitat approval (Fisheries Act Authorization 16-HPAC-00729), are to be obtained by the Contractor and submitted to the Departmental Representative. Cost for these items are to be included in the Contractor's bid.

12.5 REGULATORY REQUIREMENTS

- .1 Comply with all municipal, provincial and national codes and regulations relating to project.
- .2 Mark floating equipment with lights in accordance with Canadian Coast Guard and Transport Canada standard.

12.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Type of basin material in the vicinity of the general site area was investigated in 2015, and is primarily classified as Class B material. Particle size distribution of sediment samples collected within the dredge footprint indicates that sediments consist of primarily sand with trace to some silt/clay. Sediments may also contain trace to some cobbles characteristic of sediments near existing floats and the shore.
- .2 Material samples collected within the dredge area were analysed and determined to not meet Environment Canada Disposal at Sea requirements. Lab data from these samples are provided for bidder reference.
- .3 Metals, wood and recyclable materials, if any, removed during the dredging activities must be diverted appropriate recycling facilities.

12.7 SCHEDULING

- .1 Submit to Departmental Representative within two (2) weeks after award of Contract, schedule of work including time periods during which each operation involved in Work will be undertaken. At time of submission of schedule, meet with Departmental Representative to review schedule.



- .2 Adhere to schedule and take immediate action to correct any slippage by effectively altering existing dredging operations or mobilizing other equipment. Notify Departmental Representative of corrective action to be taken.

12.8 LOCATION

- .1 Work comprises dredging of areas as indicated in contract drawings.

12.9 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, 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 Harbour Manager, Canadian Coast Guard, and Fisheries and Oceans informed of dredging operations in order that necessary Notices to Mariners will be issued.

12.10 DATUM, WATER GAUGES AND TARGETS

- .1 Elevations used in this specification and contract drawings are in metres referred to Chart Datum derived from Canadian Hydrographic Services.
- .2 Areas to be dredged are to be referenced to vertical bench marks for each location of dredging as indicated.

12.11 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, Marine Directorate and this certificate should be ready for submission if requested.

12.12 INSPECTION OF SITE

- .1 Contractor is advised to be thoroughly familiar with extent and nature of Work and conditions affecting Work before tendering. The site is open to the public

12.13 SITE INFORMATION

- .1 Results of prior soundings and general geological/biophysical information are made available for reference only. It should be noted that this information may differ from the current site condition. Take this into consideration when submitting tender.
- .2 Take necessary steps to become fully familiar with potential inclement weather and sea conditions in this area.



12.14 SURVEY REQUIREMENTS

- .1 The Departmental Representative will provide pre and post dredging survey for quality control and payment purposes; however, the Contractor is responsible for intermediate survey at their own cost to assess project progress and performance for their reference.

12.15 SURVEYS AND ACCEPTANCE OF WORK

- .1 No area will be dredged prior to Departmental Representative and Contractor's mutual acceptance of pre-dredge survey for that area.
- .2 Post-dredge survey will be undertaken by Departmental Representative upon completion of dredging indicated by the Contractor. Survey will confirm if dredging is completed as specified and whether area can be considered cleared area. Survey will be conducted in accordance with the "Canadian Hydrographic Survey Standards".
- .3 Contractor to re-dredge as necessary to remove all material within dredge areas which is found to be above design dredge depth of -3.0m with an approved sub-grade of -3.2m.
- .4 Additional survey will be undertaken at Contractor's cost, for those areas not meeting acceptance criteria for dredging. All additional surveys required to clear areas will be undertaken at Contractor's cost.
- .5 Departmental Representative will take average of instantaneous soundings simultaneously with least of minimum soundings.
- .6 All elevations obtained within specified areas of dredging must be at or deeper than the specified dredge elevation within tolerance before area will be considered completed.

Part 13 Products

13.1 DREDGING EQUIPMENT

- .1 Contractor to determine required equipment necessary to dredge material specified and to dispose of dredged material at the proposed and approved locations.

Part 14 Execution

14.1 GENERAL

- .1 Material shall not be "double-handled" on the sea bed;
- .2 A full height isolation barrier (e.g., silt curtain) shall be installed to isolate the dredge area from adjacent areas that contain eelgrass beyond the dredge footprint. The Contractor will be responsible for developing the methodology.



- .3 Isolation barrier shall be provided by the Contractor. The isolation barrier shall provide water quality in areas containing eelgrass beds outside the dredge area with the following criteria:
 - .1 20 NTU above background.
 - .2 Under low flows, the maximum increase of 25 mg/L from background levels for any short-term exposure (e.g., 24-h period). Maximum average increase of 15 mg/L from background levels for longer term exposures (e.g., inputs lasting between 24 h and 30 d).
 - .3 Under high flows, the maximum increase of 25 mg/L from background levels at any time when background levels are between 25 mg/L and 250 mg/L. Should not increase more than 10% of background levels when background level > 25 mg/L
 - .4 Monitoring for both turbidity in NTU and TSS will be carried out by a Departmental Representative at the Owners expense.
 - .5 If turbidity and/or TSS measurements exceed the criteria described above, works may be stopped to prevent smothering of adjacent eelgrass beds and the Contractor will be required to provide alternate isolation barrier methodology to meet the requirements.
- .4 Mark floating equipment with lights in accordance with International Rules of Road and maintain radio watch on board.
- .5 Place and maintain buoys, markers and lights required to define work and disposal areas.
- .6 Lay out Work from bench marks and base lines 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.
- .7 Establish and maintain water level gauges or tide boards in order that proper depth of dredging can be determined. Locate gauges or tide boards so as to be clearly visible.
- .8 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.
- .9 Dredge volume is estimated to be approximately 700 cubic metre to grade depth of EL -3.0m with an approved sub-grade of -3.2m.
- .10 Dredge side slopes to 1.5 horizontal to 1 vertical.
- .11 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.
- .12 Remove shoaling which occurs as result of Work at no expense to Departmental Representative.



- .13 Remove material cast-over on surrounding area and dispose of it as dredged material. Do not cast-over material unless authorized by Departmental Representative.
- .14 Remove infilling in dredge areas which occurs prior to acceptance by Departmental Representative.
- .15 Immediately notify Departmental Representative upon encountering object which might be classified as obstruction. By-pass object after clearly marking its location and continue Work.

14.2 DISPOSAL OF DREDGED MATERIAL

- .1 Dredge material will be disposed of by the Contractor off-Site, in accordance with applicable regulations.

14.3 DREDGING IN VICINITY OF STRUCTURES

- .1 Do not dredge material from areas lying within 3 m of existing structure unless authorized by Departmental Representative.
- .2 Contractor is responsible to check and clear the dredge area from any underwater structures, including but not limited to mooring lines, anchor blocks, and piles.

14.4 SWEEPING

- .1 Sweep dredged areas on completion of dredging to confirm that grade depth has been achieved.
- .2 If, as result of incomplete Work, additional verification of depths by sounding or sweeping becomes necessary, additional costs involved shall be paid by Contractor.

14.5 RE-DREDGING

- .1 The Contractor is responsible for re-dredging unsatisfactory Work at own cost and verify depths with additional sounding or sweeping to approval of Departmental Representative.

14.6 CO-OPERATION AND ASSISTANCE TO ENGINEER

- .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.

END OF SECTION



Approved: 2013-06-30

Part 15 General

15.1 RELATED REQUIREMENTS

- .1 Section 01 11 00 SUMMARY OF WORK
- .2 Section 01 14 00 WORK RESTRICTIONS
- .3 Section 01 41 00 REGULATORY REQUIREMENTS
- .4 Section 01 35 43 ENVIRONMENTAL PROCEDURES
- .5 Section 01 45 00 QUALITY CONTROL
- .6 Section 35 20 23 DREDGING

REFERENCES

- .7 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
- .8 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .9 Province of British Columbia
 - .1 Workers Compensation Act, RSBC 1996 - Updated [2012].

15.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
 - .1 Results of site specific safety hazard assessment.
 - .2 Results of safety and health risk or hazard analysis for site tasks and operation.
- .2 Submit 3 copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative
- .3 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .4 Submit copies of incident and accident reports.
- .5 Submit WHMIS MSDS - Material Safety Data Sheets.
- .6 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 5 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative 5 days after receipt of comments from Departmental Representative.



- .7 Departmental Representative's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .8 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

15.3 FILING OF NOTICE

- .1 File Notice of Project with Provincial authorities prior to beginning of Work.
- .2 Contractor shall be responsible and assume the Principal Contractor role for each work zone location and not the entire complex. Contractor shall provide a written acknowledgement of this responsibility with 3 weeks of contract award.
- .3 Work zone locations include:
 - .1 Zeballos Small Craft Harbour.
- .4 Contractor shall agree to install proper site separation and identification in order to maintain time and space at all times throughout life of project.

15.4 SAFETY ASSESSMENT

- .1 Perform site specific safety hazard assessment related to project.

15.5 MEETINGS

- .1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work.

15.6 PROJECT/SITE CONDITIONS

- .1 Contractor shall be responsible for understanding site and project specific conditions which may affect health and safety

15.7 GENERAL REQUIREMENTS

- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- .2 Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

15.8 RESPONSIBILITY

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.



- .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

15.9 COMPLIANCE REQUIREMENTS

- .1 Comply with Workers Compensation Act, B.C. Reg.
- .2 Comply with R.S.Q., c. S-2.1, an Act respecting Health and Safety, and c. S-2.1, r.4 Safety Code for the Construction Industry.
- .3 Comply with Occupational Health and Safety Regulations, 1996.
- .4 Comply with Occupational Health and Safety Act, General Safety Regulations, O.I.C..
- .5 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

15.10 UNFORSEEN HAZARDS

- .1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction and advise Departmental Representative verbally and in writing.
- .2 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, advise Health and Safety co-ordinator and follow procedures in accordance with Acts and Regulations of Province having jurisdiction and advise Departmental Representative verbally and in writing.

15.11 HEALTH AND SAFETY CO-ORDINATOR

- .1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:
 - .1 Have site-related working experience specific to activities associated with marine construction.
 - .2 Have working knowledge of occupational safety and health regulations.
 - .3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
 - .4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.

15.12 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province having jurisdiction, and in consultation with Departmental Representative.

15.13 CORRECTION OF NON-COMPLIANCE

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Department Representative.



- .2 Provide Departmental Representative with written report of action taken to correct non-compliance of health and safety issues identified.
- .3 Departmental Representative may stop Work if non-compliance of health and safety regulations is not corrected.

15.14 BLASTING

- .1 Blasting or other use of explosives is not permitted

15.15 WORK STOPPAGE

- .1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

Part 16 Products

16.1 NOT USED

- .1 Not used.

Part 17 Executionw

17.1 NOT USED

- .1 Not used.

END OF SECTION

