



**Fisheries and Oceans  
Canada**



**Small Craft Harbours**

**Kegaska**

---

**Artificial Reefs Construction**

**Project n° F3731-220 155**

**Specifications for tender**



## TABLE OF CONTENTS

<u>Division</u>	<u>Descriptions</u>	<u>Number of pages</u>
<b><u>DIVISION 1</u></b>	<b><u>GENERAL REQUIREMENTS</u></b>	
	Section 01 11 11 – Description of Work .....	4
	Section 01 11 55 – Weigh Scales.....	2
	Section 01 14 00 – Work Restrictions .....	2
	Section 01 29 83 – Payment Procedures: Testing Laboratory Services .....	2
	Section 01 31 19 – Meeting .....	2
	Section 01 32 16 – Construction Progress Schedules - Bar (Gantt) Charts .....	4
	Section 01 33 00 – Submittal Procedures .....	5
	Section 01 35 29 – Health and Safety Requirements .....	8
	Section 01 35 43 – Environmental Procedures .....	6
	Section 01 41 00 – Regulatory Requirements.....	2
	Section 01 45 00 – Quality Control .....	3
	Section 01 45 01 – Quality Insurance .....	4
	Section 01 52 00 – Construction Facilities .....	3
	Section 01 56 00 – Temporary Barriers and Enclosures.....	2
	Section 01 71 00 – Examination and Preparation .....	2
	Section 01 74 11 – Cleaning .....	2
	Section 01 77 00 – Closeout Procedures .....	2
<b><u>DIVISION 35</u></b>	<b><u>WATERWAYS AND MARINE CONSTRUCTION</u></b>	
	Section 35 31 23 – Rubble mound breakwater .....	11



**Part 1            General**

**1.1                RELATED SECTIONS**

- .1        Section 01 14 00 – Work Restrictions
- .2        Section 01 32 18 - Construction Progress Schedules - Bar (Gantt) Charts

**1.2                WORK COVERED BY CONTRACT DOCUMENTS**

- .1        This list of work is not necessarily complete and does not relieve the Contractor of his responsibility to carry out any other work, alterations or changes required to complete the work stipulated in this project satisfactorily.
- .2        Construction of artificial reefs in Kegaska on North Shore includes, but is not limited to:
  - .1        Supply and installation of different stones sizes for construction of seven (7) artificial reefs for lobster.
  - .2        Hire a diving company as a sub contractor to verify compliance of reefs and writing report of work completion.
  - .3        Multi beams bathymetric survey by a specialized company after works;
  - .4        Following bid review, DFO could add optional reefs to contract.

**1.3                WORK EXTENT**

- .1        Work included in this project comprises the supply of all materials, labour, tools, equipment, and also protection and transport necessary to execute and finish work accordingly to specifications, in such a manner that the whole property shows uniformity.
- .2        Co-ordination and allocation of work among subcontractors is the sole responsibility of the General Contractor, and no reference to subcontractors in these documents shall be construed as binding Canada with respect to any such allocation.

**1.4                WORK SEQUENCE**

- .1        Construct Work in stages, and if possible, as directed by Departmental Representative.
- .2        Coordinate Progress Schedule with Departmental Representative.
- .3        The work shall observe the following schedule:
  - .1        Upon receipt of the notice of acceptance of the offer, the Contractor must perform the following tasks:
  - .2        **Send documents to submit : stone quality certificate; unit cost list; work method description; contract for third party storage land and wharf for stone loading in barge.**
  - .3        For more information on schedules, refer to Section 01 32 18 - Scheduling bar charts (Gantt)
- .4        Sequence activities to limit exposure of partially constructed work to waves, ice and snow storms. Damages to new structures, partially constructed or approved, prior to substantial completion, due to Contractor or subcontractor operations, shall be repaired by Contractor at no additional cost for Departmental Representative.

## 1.5 CONTRACTOR USE OF PREMISES

- .1 DFO do not provide with vacant lot for storage or a wharf for loading. If the Contractor wishes to use third party lot for work or storage space required for operations under this contract, the latter shall obtain a written agreement reached between both parties and pay the applicable fees. A copy of this agreement shall be provided to the Departmental Representative.

## 1.6 MEASUREMENT METHOD

- .1 Provision of materials, labour, tools, equipment, protection, transport, administration fees, profits, financing, etc., required to perform the work in this undertaking are included in each item described below, unless otherwise indicated.
- .2 Measuring method for items will be:
  - .1 Item No. 1 Site organization. Mobilization – demobilisation.
    - .1 Item will be measured as a lump sum price and includes all items listed in division 1, also items that cannot be assigned to another measurement item. It also includes cost related to transport, shipping and handling of material and site facilities.
    - .2 Site organization during work will be paid proportionately with monthly progress payments.
  - .2 Item No. 2 – Stone for 7 (seven) reefs
    - .1 This item is divided as follows:
      - .1 400 @ 750 mm
      - .2 200 @400 mm
      - .3 100 @200 mm
    - .2 The items will be measured in metric tons in limits of works confirmed with bathymetric survey and diving report. The unit price includes all costs involved in producing, transporting, sorting, weighing and implementing materials, including the Contractor's quality insurance activities, pre-production activities required for the approval of the source of materials, and activities required throughout production, namely the control plan for stone materials and monitoring and spot-check surveys required to complete the structure as specified.
    - .3 The payment amount shall be determined by the weigh tickets from certified scales, less all deductions for stone that is refused or beyond tolerance limits.
    - .4 The calculation of stone installed beyond tolerance limits, which the Departmental Representative agrees to leave as is, must be based on the spot-check surveys carried out during construction. The volume of this stone shall be determined by the average cross-sectional area method. It shall be converted to tons at 1.8 tons/cubic meter and the resulting tonnage shall be deducted from the payment. Material lost or used by the Contractor for any other purpose as well as material not installed in the structure in accordance with the requirements and plans shall also be deducted from the payment.

- .5 No payment shall be made until an appropriate stone control plan has been submitted by the Contractor and reviewed by the Departmental Representative.
- .6 Under the provisions of the CCDG, all expenses related to the installation, maintenance, material, labor required at the weigh station and scale are included in the unit price of materials incorporated into the structure.
- .7 Item includes the supply of stone, equipment, machinery, labor and after work survey for the installation of artificial reefs.
- .3 Item No. 3 - Work Compliance Report and bathymetric survey
  - .1 Item will be measured as a lump sum price and includes hiring a professional diving company for verification of the general condition and compliance of work by an underwater video description and preparation of a report. This item also includes hiring a specialized company to provide with a multibeam survey of works to ensure works compliance.
- .4 Item n° 4 - OPTIONAL Construction of five (5) extra reefs
  - .1 This item is measured by the lump sum. It includes all costs as described in items 1 and 3 for construction of five (5) reefs, in addition to those in base contract.
    - 1. 4.1 - Site organization and mobilization – demobilization
    - 2. 4.2 – Work compliance report and bathymetric survey
- .5 Item n°5 -Stone for 5(five) OPTIONAL reefs
  - .1 This item is measured by the metric tone and includes cost for stone as described in item 2 for reefs construction.
  - .2 This item is divided as follows:
    - .1 400 @ 750 mm
    - .2 200 @400 mm
    - .3 100 @200 mm
- .3 The global lump sum that contractor had to submit at tender must be broken down and sent to Representative within 2 weeks after notice of acceptance of offer.

## 1.7 DOCUMENTS REQUIRED

- .1 Maintain at work site, one copy of each document mentioned above:
  - .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 Other documents as specified

**Part 2 Products**

**2.1 NOT USED**

- .1 Not used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not used.

**END OF SECTION**



**Partie 1            General information**

**1.1                DESCRIPTION**

- .1            This section specifies requirements for truck weigh scales, unless otherwise specified, for weighing of materials where measurement for payment is based on mass.

**1.2                REQUIREMENTS OF REGULATORY AGENCIES**

- .1            Prior to use weigh scales, obtain certification meeting requirements of Weights and Measures Act. Display certificate in a prominent position.

**Partie 2            Products**

**2.1                MATERIAL**

- .1            Weigh scales: supply a scale of sufficient capacity to weigh loaded vehicles in a single operation and with on automatic printer.
  - .3            The Contractor shall provide weight tickets for all stones produced for project. Hand written tickets will not be accepted. .

**Partie 3            Execution**

**3.1                INSTALLATION**

- .1            Provide, install and maintain scale and scale house convenient to project site, at location approved by Departmental Representative. However the contractor is still responsible to verify that the loaded vehicles do not exceed the limits allowed on the roads he intends to use.
- .2            Remove scale and scale house when no longer required by Departmental Representative, level approach and exit ramps.

**3.2                WEIGHING**

- .1            Contractor's representatives at scales will weigh monitor weighing of materials.

**3.3                MAINTENANCE**

- .1            Maintain scale platform and scale mechanism clean and free from gravel, asphalt, snow, ice and debris.
- .2            Maintain approach and exit ramps in good condition free from sags and ruts.
- .3            Have scales recertified if requested by Departmental Representative at no cost for Departmental Representative.

**3.4                OPERATION**

- .1            Include costs of certification, installation, maintenance and removal of scale and cabin in items of work to be measured by mass.
- .2            The wages for the Contractor's representative at the scale are to be paid by the Contractor with no cost for Departmental Representative.

**3.5 ACCEPTATION OF MATERIALS**

- .1 The acceptation of materials shall be made on the work site.
- .2 The contractor is responsible for the materials to comply with the specifications.

**END OF SECTION**

## **1 General**

### **1.1 RELATED SECTIONS**

- .1 Section 01 32 18 - Construction Progress Schedules - Bar (Gantt) Charts
- .2 Section 01 35 43 – Environmental Procedures
- .3 Section 01 56 00 – Temporary Barriers and Enclosures

### **1.2 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.

### **1.3 EXISTING SERVICES**

- .1 Inform Departmental Representative and public carriers of the scheduled interruption of services and obtain permissions.
- .2 Whether to perform pressure on existing networks or connections to those networks, notify the representative of Ministry 48 hours before the scheduled time of interruption of the electrical or mechanical systems services. Ensure that the duration of interruptions is as short as possible. Make breaks after normal hours of work of the occupants, preferably weekend.
- .3 Ensure the movement of pedestrians, vehicles and personnel.
- .4 Build temporary barriers of protection in accordance with the 01 56 00 - works for access and protection section.
- .5 Preserve safe navigation close to the entrance and in the Harbour

### **1.4 SPECIAL REQUIREMENTS**

- .1 Proceed to a survey of pavement condition of roadway used for trucking. That survey must be done with Departmental Representative. Bring condition of pavement to an equivalent or better condition than before works.
- .2 Noisy work shall be performed Monday through Friday between 7 am and 18 pm, or according to municipal regulation.
- .3 Develop and submit construction progress schedule in accordance with Section 01 32 16 – Construction Progress Schedules – Bar (Gantt) Charts.
- .4 Contractor shall comply with environmental limitation mentioned in Section 01 35 43 – Environmental Procedures.
- .5 Ensure that Contractor personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.
- .6 Keep within limits of work, and avenues of ingress and egress free of obstacles.
- .6 In his construction schedule, the Contractor shall ensure the continuity of operations by other users during the work period.

- .7 The Contractor is responsible for obtaining, from harbour authority officials, all relevant information concerning activities in the fishing harbour. Plan and carry out the work so as not to hamper fishing activities or impede access to port facilities.

## **1.5 SAFETY**

- .1 .Provide temporary means to maintain security if it has been reduced because of the work covered by this contract. Provide with flag persons when there are safety issues in trucking area.

## **1.6 NAVIGATION INTERFERENCE**

- .1 It is of Contractor's responsibility to get from harbour authorities all information necessary to perform his activities in the harbour. Contractor shall plan and execute work in such manner that it will not interfere with usual operations, or limit access to wharf, by land or water.
- .2 Contractor is responsible for loss of time, equipment, material or any other cost related to interference with moored vessels, displacements of ships in harbour or other impacts Caused by Contractor's operations.

## **2 Products**

### **2.1 NOT USED**

- .1 Not Used.

## **3 Execution**

### **3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1            General**

**1.1                RELATED SECTIONS**

- .1        Specific requirements for inspections and tests to be performed by the laboratory designated by the Departmental Representative are prescribed in the following sections of the Specifications
  - .1            Section 35 31 23 – Rubble Mound Breakwater

**1.2                APPOINTMENT AND PAYMENT**

- .1        Contractor is responsible to hire a laboratory for his needs including the following:
  - .1            Quality insurance of quarry stones which is contractor's responsibility.
  - .2            Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.
  - .3            Inspection and testing performed exclusively for Contractor's convenience.
  - .4            Mill tests and certificates of compliance.
  - .5            Tests specified to be carried out by Contractor under the supervision of Departmental Representative.
- .2        Where tests or inspections by designated testing laboratory reveal Work not in accordance with contract requirements, pay costs for additional tests or inspections as required by Departmental Representative to verify acceptability of corrected work.

**1.3                CONTRACTOR'S RESPONSIBILITIES**

- .1        Provide labour, equipment and facilities to:
  - .1            Provide access to Work for inspection and testing.
  - .2            Facilitate inspections and tests.
  - .3            Make good Work disturbed by inspection and test.
  - .4            Provide storage on site for laboratory's exclusive use to store equipment and cure test samples.
- .2        Notify Departmental Representative sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test.
- .3        Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.
- .4        Pay costs for uncovering and making good Work that is covered before required inspection or testing is completed and approved by Departmental Representative.

**Part 2            Products**

**2.1                NOT USED**

.1            Not Used.

**Part 3            Execution**

**3.1                NOT USED**

.1            Not Used.

**END OF SECTION**

**Part 1            General**

**1.1                ADMINISTRATIVE**

- .1     Schedule of project meetings throughout the course of the work and at the request of the Departmental Representative, and the management of these.
- .2     Provide physical space and make arrangements for meetings.

**1.2                PRECONSTRUCTION MEETING**

- .1     Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.
- .2     Points on the agenda of the day
  - .1     Designation of official representatives of the participants in the work.
  - .2     Schedule of work, according to section 01 32 16 – Construction progress schedule - bar (GANTT) charts.
  - .3     Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00 – Submittal Procedures.
  - .4     Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section according to the 01 52 00 – Construction facilities.
  - .5     Delivery of materials and materials prescribed schedule.
  - .6     Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.
  - .7     Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
  - .8     Owner provided products.
  - .9     Record drawings in accordance with Section 01 33 00 - Submittal Procedures.
  - .10    Monthly progress claims, administrative procedures, photographs, hold backs.
  - .11    Appointment of inspection and testing agencies or firms.
  - .12    Insurances, transcript of policies.

**1.3                PROGRESS MEETINGS**

- .1     Schedule meetings that will be held during the course of the work.
- .2     Contractor, major subcontractors involved in work and Departmental Representative are to be in attendance.
- .3     Agenda to include the following:
  - .1     Review, approval of minutes of previous meeting.
  - .2     Review of Work progress since previous meeting.
  - .3     Field observations, problems, conflicts.
  - .4     Problems which impede construction schedule.
  - .5     Review of off-site fabrication delivery schedules.

- .6 Corrective measures and procedures to regain projected schedule.
- .7 Revision to construction schedule.
- .8 Progress schedule, during succeeding work period.
- .9 Review submittal schedules: expedite as required.
- .10 Maintenance of quality standards.
- .11 Review proposed changes for effect on construction schedule and on completion date.
- .12 Other

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.



## 1.1 DÉFINITIONS

- .1 Activity: determined work carried out as part of a project. An activity normally has an expected duration and expected cost in resources-related needs. Activities can be subdivided into tasks.
- .2 Bar Chart (GANTT Chart): graphic display of schedule related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.
- .3 Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.
- .4 Construction Work Week: Monday to Friday, inclusive, will provide 5 day-work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.
- .5 Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.
- .6 Master Plan: summary level schedule that identifies major activities and key milestones.
- .7 Milestone: significant event in project, usually completion of major deliverable.
- .8 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision-making throughout project life cycle.
- .9 Project Planning, Monitoring and Control System: overall system operated by Departmental Representative to enable monitoring of project work in relation to established milestones.

## 1.2 REQUIREMENTS

- .1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.
- .2 The overall plan must provide for the realization of the work according to the prescribed milestones, within the agreed time.
- .3 Limit activity durations to maximum of approximately 10 working days, to allow for progress reporting.
- .4 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Certificate of substantial performance and Final Certificate as defined times of completion are of essence of this contract.

## 1.3 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

- .2 Submit to Departmental Representative within 10 working days of Notice of acceptance of the offer, the Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.
- .3 Submit Project Schedule to Departmental Representative within 5 working days of receipt of acceptance of Master Plan.
- .4 The Contractor shall be responsible for the information required to set up the work schedule. The Contractor shall submit to the Departmental Representative information concerning the work operations and sequence, the breakdown of the work into activities and the duration of these activities.
- .5 Work schedules are submitted subject to approval by the Departmental Representative. The Departmental Representative may require additional schedules or reports to demonstrate timely progress in the work or any other project deadline or indication of unrealistic performance.
- .6 Approval of work schedules by the Departmental Representative does not release the Contractor from its obligation to complete the work in accordance with the contract documents. Approval of the submitted schedules by the Departmental Representative shall not make the latter liable for time or cost overruns resulting from delays in the schedule.
- .7 The work schedule and monthly schedule updates shall be provided to the Departmental Representative for review with each request for payment as a condition of processing the payment request.
- .8 The Departmental Representative and the Contractor shall revise the updated work schedule at each progress meeting. The Contractor shall revise the schedule to incorporate changes made during the progress meetings.
- .9 When the deadlines or the completion date are not met, the Contractor shall, at no additional cost to the Departmental Representative, undertake one or more of the following: increase labour, increase working hours or take other actions to eliminate work delays.

#### **1.4 PROJECT MILESTONES**

- .1 Milestones of the project are the interim targets set out in the schedule.
- .2 Works consist to:
  - .1 Proceed to quality tests on quarry stone, including laboratory tests and weight of sample stones
  - .2 After review of laboratory test by Departmental Representative, proceed to stone production
  - .3 Stone Transport to barge loading site
  - .4 Load barge and place stone according to its caliber to build the artificial reefs.
  - .5 .4 Completing the Compliance Report

#### **1.5 MASTER PLAN**

- .1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar (GANTT) Chart.

- .2 Departmental Representative will review and return revised schedules within 5 working days.
- .3 Revise impractical schedule and resubmit within 5 working days.
- .4 Accepted revised schedule will become Master Plan and be used as baseline for updates.
- .5 Contractor shall be responsible for information required to develop the construction schedule. Contractor shall provide Departmental Representative with information regarding work operations, sequence of work, breakdown of the work into activities, and time estimates for the activities.

## **1.6 PROJECT SCHEDULE**

- .1 Develop a timetable for execution detailed from the master plan.
- .2 The time frame detailed must at least understand the steps for the following activities.
  - .1 Award
  - .2 Shop drawings, samples
  - .3 Permits
  - .4 Mobilization
  - .5 Delivery of materials
  - .6 Barge loading
  - .7 Reefs construction
  - .8 Compliance report
  - .9 Demobilization

## **1.7 PROJECT SCHEDULE REPORTING**

- .1 Update Project Schedule on weekly basis reflecting activity changes and completions, as well as activities in progress.
- .2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.
- .3 The approval of Project Schedule by the Departmental Representative does not relieve the Contractor of his obligation to achieve works according to specifications. The acceptance of submitted Project Schedule by Departmental Representative will not make him responsible for goings of time or costs resulting from delays.
- .4 Both Departmental Representative and Contractor will have to update the Project Schedule at each site meeting. The Contractor will have to modify the Project Schedule in order to include the modifications that are done.
- .5 When the limit date or work achievement date will not be respected, the Contractor will, and this without additional fees for Departmental Representative, have to take one or more

## **1.8 PROJECT MEETINGS**

- .1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule

are those with projected start or completion dates later than current approved dates shown on baseline schedule.

- .2 Weather related delays with their remedial measures will be discussed and negotiated.

**Part 2 Products**

- 2.1 NOT USED**
  - .1 Not used.

**Part 3 Execution**

- 3.1 NOT USED**
  - .1 Not used.

**END OF SECTION**

**Part 1            General**

**1.1                RELATED SECTIONS**

- .1            Section 01 45 00 - Quality control

**1.2                ADMINISTRATIVE**

- .1            Submit to Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2            Do not proceed with Work affected by submittal until review is complete.
- .3            Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .4            Where items or information is not produced in SI Metric units converted values are acceptable.
- .5            Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .6            Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .7            Verify field measurements and affected adjacent Work are co-ordinated.
- .8            Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .9            Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.
- .10           Keep one reviewed copy of each submission on site.

**1.3                SHOP DRAWINGS AND PRODUCT DATA**

- .1            The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2            Submit shop drawings bearing stamp and signature of qualified professional engineer registered or licensed in the Province of Québec, Canada.
- .3            Coordinate the submission of necessary documents or samples in accordance with work and contract document requirements. Documents or samples submitted individually will not be verified until all related information is available.
- .4            Identify potential stakeholders in the project, such as the Contractor, subcontractors and suppliers, as well as all sections of the specifications, shop drawings and details relating thereto.

- .5 Leave a space on the documents for the "Document Verification" stamp by the Contractor and Departmental Representative.
- .6 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .7 Allow 5 days for Departmental Representative's review of each submission.
- .8 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .9 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
- .10 Accompany submissions with transmittal letter, in duplicate, containing:
  - .1 Date
  - .2 Project title and number
  - .3 Contractor's name and address
  - .4 Identification and quantity of each shop drawing, product data and sample
  - .5 Other pertinent data
- .11 Submissions include:
  - .1 Date and revision dates
  - .2 Project title and number
  - .3 Name and address of:
    - .1 Subcontractor
    - .2 Supplier
    - .3 Manufacturer
  - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
  - .5 Details of appropriate portions of Work as applicable:
    - .1 Fabrication.
    - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
    - .3 Setting or erection details.
    - .4 Capacities.
    - .5 Performance characteristics.
    - .6 Standards.
    - .7 Operating weight.
    - .8 Wiring diagrams.

- .9 Single line and schematic diagrams.
- .10 Relationship to adjacent work.
- .6 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
- .7 Testing must have been within 3 years of date of contract award for project.
- .12 Submit certificates for requirements requested in specification Sections and as requested by Departmental Representative.
  - .1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
  - .2 Certificates must be dated after award of project contract complete with project name.
- .13 Submit Manufacturer's Field Reports for requirements requested in specification Sections and as requested by the Departmental Representative.
- .14 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .15 Submit Operation and Maintenance Data for requirements requested in specification Sections and as requested by the Departmental Representative.
- .16 Delete information not applicable to project.
- .17 Supplement standard information to provide details applicable to project.
- .18 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- .19 Review of shop drawings is for sole purpose of ascertaining conformance with general concept.
  - .1 This review shall not mean that Departmental Representative approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting all requirements of construction and Contract Documents.
  - .2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of all sub-trades.

#### **1.4 SAMPLES**

- .1 Submit for review samples in duplicate as requested in respective specification Sections. Label samples with origin and intended use.
- .2 Deliver samples prepaid to Departmental Representative's site office.

- .3 Notify Departmental Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.
- .4 Where colour, pattern or texture is criterion, submit full range of samples.
- .5 Adjustments made on samples by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing Departmental Representative prior to proceeding with Work.
- .6 Make changes in samples which Departmental Representative may require, consistent with Contract Documents.
- .7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

## **1.5 MOCK-UPS**

- .1 Erect mock-ups in accordance with 01 45 00 - Quality Control

## **1.6 PHOTOGRAPHS SHOWING WORK PROGRESS**

- .1 Submit a copy of colour digital photography in .jpg format, standard resolution as directed by the Departmental Representative.
- .2 Project identification: name and number of project and date of exposure indicated.
- .3 Frequency of photographic documentation: as directed by the Departmental Representative.
  - .1 Upon completion of excavation, foundation, framing and services facilities works, before concealment

## **1.7 CERTIFICATES AND TRANSCRIPTS**

- .1 Immediately after award of Contract, submit Workers' Compensation Board status.
- .2 The Contractor shall:
  - .1 When specified in individual Specification Sections, submit certification by manufacturer to Departmental Representative, in quantities required.
  - .2 Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
  - .3 Certificates or previous or recent test results on material may be submitted, but must be accepted by Departmental Representative.

## **1.8 PRODUCT DATA**

- .1 The Contractor shall:
  - .1 Submit the number of copies that the Contractor requires, plus two copies to be retained by Departmental Representative.
  - .2 Mark each copy to identify applicable products model, option, and other data. Supplement manufacturers' standard data to provide information unique to the Project.



- Part 2**            **Products**  
**2.1**                **NOT USED**  
                      .1        Not Used.

- Part 3**            **Execution**  
**3.1**                **NOT USED**  
                      .1        Not Used.

**END OF SECTION**

**Part 1            General**

**1.1                REFERENCES**

- .1        Canada Labour Code - Part II, Canadian Occupational Safety and Health Regulations.
- .2        Province of Québec
  - .1        Act Respecting Occupational Health and Safety, R.S.Q. Chapter S-2.1.
  - .2        Construction Safety Code, S-2.1, r.6.
- .3        Canadian Standards Association (CSA)
- .4        Workplace Hazardous Materials Information System (WHMIS)
  - .1        Material Safety Data Sheets (MSDS).
- .5        Canada Shipping Act and Navigable Waters Protection Act

**1.2                SUBMITTALS**

- .1        Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2        Submit to Departmental Representative, the CNESST and the Association paritaire en santé et sécurité du secteur de la construction (ASP Construction) the site-specific safety program, as outlined in 1.8 at least 10 days prior to start of work. The Contractor must review his program during the course of the project if any change occurs in work methods or site conditions. The Departmental Representative may, after receiving the program or at any time during the project, ask the Contractor to update or modify the program in order to better reflect the reality of the construction site and activities. The Contractor must make the required changes before work begins.
- .3        Submit to Departmental Representative the site inspection sheet, duly completed, at the intervals indicated in 1.12.1.
- .4        Submit to Departmental Representative within 24 hours a copy of any inspection report, correction notice or recommendation issued by federal or provincial inspectors.
- .5        Submit to Departmental Representative within 24 hours an investigation report for any accident involving injury and any incident exposing a potential hazard.
- .6        Submit to Departmental Representative all safety data sheets for hazardous material to be used at the site at least three days before they are to be used.
- .7        Submit to Departmental Representative copies of all training certificates required to apply the safety program, in particular:
  - .1        General construction site safety and health courses;
  - .2        Safety officer attestations;
  - .3        First aid in the workplace and cardiopulmonary resuscitation;
  - .4        Wearing and fitting of individual protective gear;
  - .5        Forklift truck;
  - .6        Positioning platform;
  - .7        Any other requirement of Regulations or the safety program.

- .8 Medical examinations: Wherever legislation, regulations, directives, specification or a safety program require medical examinations, Contractor must:
  - .1 Prior to start-up, submit to Departmental Representative certificates of medical examination for all concerned supervisory staff and employees who will be on duty when the site opens.
  - .2 Thereafter, submit without delay certificates of medical examination for any newly hired concerned personnel as and when they start work at the site.
- .9 Emergency plan: The emergency plan, as defined in 1.8.3, shall be submitted to Departmental Representative at the same time as the site-specific safety program.
- .10 Notice of site opening: Notice of site opening shall be submitted to the Commission *de la santé et de la sécurité du travail* before work begins . A copy of such notice shall be submitted to Departmental Representative at the same time and another posted in full view at the site. During demobilization, a notice of site closing shall be submitted to the CNESST, with copy to Departmental Representative.
- .11 Engineer's plans and certificates of compliance : Submit to the CNESST and to Departmental Representative a copy signed and sealed by engineer of all plans and certificates of compliance required pursuant to the Construction Safety Code (S-2.1, r. 6), or by any other legislation or regulation or by any other clause in the specifications or in this contract. Copies of these documents must be on hand at the site at all times.
- .12 Certificate of compliance delivered by the CNESST: The certificate of compliance is a document delivered by the CNESST confirming that the contractor is in rule with the CSST, i.e. that he had pay out all the benefits concerning this contract. This document must be delivered to Departmental Representative at the end of the work.

### **1.3 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. Contractor to submit written acknowledgement to CNESST along with Ouverture de Chantier Notice.
- .3 Contractor shall agree to install proper site separation and identification in order to maintain time and space at all times throughout life of project.

### **1.4 HAZARDS ASSESSMENT**

- .1 The contractor must identify all hazards inherent in each task to be carried out at the site.
- .2 The contractor must plan and organize work so as to eliminate hazards at source or promote mutual protection so that reliance on individual protective gear can be kept to a minimum. Where individual protection against falling is required, workers shall use safety harness that meets standard Can - CSA- Z-259.10 - 06. Safety belts shall not be used as protection against falling.
- .3 Equipment, tools and protective gear which cannot be installed, fitted or used without compromising the health or safety of workers or the public shall be deemed inadequate for the work to be executed.

- .4 All mechanical equipment shall be inspected before delivery to the site. Before using any mechanical equipment, submit to Departmental Representative a certificate of compliance signed by a qualified mechanic. Whenever he suspects a defect or accident risk, Departmental Representative may at any time order the immediate shut-down of equipment and require a new inspection by a specialist of his own choosing.

## **1.5 MEETINGS**

- .1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work.
- .2 Contractor decisional representative must attend any meetings at which site safety and health issues are to be discussed
- .3 Set up a site safety committee, and convene meetings in accordance with the Construction Safety Code.

## **1.6 LEGAL AND REGULATORY REQUIREMENTS**

- .1 Perform Work in accordance to Section 01 41 00 – Regulatory Requirements
- .2 Comply with all legislation, regulations and standards applicable to the site and its related activities.
- .3 Comply with specified standards and regulations to ensure safe operations at site containing hazardous or toxic materials.
- .4 Regardless of the publication date shown in the construction safety code, always use the most recent version.

## **1.7 SITE-SPECIFIC CONDITIONS**

- .1 In his work planning, Contractor shall not disturb Harbour activities
- .2 Workers to be exposed to the following conditions:
  - .1 Work near watercourse.
  - .2 Work involving risk of drowning.
  - .3 Marine work with difference of tide
- .3 The weather conditions may be difficult (wind, cold, etc...). Harbour may be exposed to heavy agitation caused by waves and also moving ice floes.
- .4 Until final acceptance, the protection of work for work stability and workers' security during work progress remains under Contractor's responsibility.

## **1.8 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.

- .3 Acknowledge and assume all the tasks and obligations which customarily devolve upon a principal Contractor under the terms of the Act Respecting Occupational Health and Safety (R.S.Q., chapter S-2.1) and the Construction Safety Code (S-2.1, r.6).
- .4 Develop a site-specific safety program based on the hazards identified and apply it from the start of project work until close-out is completed. The safety program must take account of all information appearing in 1.7 and must be submitted to all parties concerned, in accordance with the provisions set forth in 1.2. At a minimum, the site-specific safety program must include:
  - .1 Company safety and health policy.
  - .2 A description of the work, total costs, schedule and projected workforce curve.
  - .3 Flow chart of safety and health responsibility.
  - .4 The physical and material layout of the site.
  - .5 First-aid and first-line treatment standards.
  - .6 Identification of site-specific hazards.
  - .7 Risk assessment for the tasks to be carried out, including preventive measures and the procedures to apply them.
  - .8 Training requirements.
  - .9 Procedures in case of accident/injury
  - .10 Written commitment from all parties to comply with the prevention program.
  - .11 A site inspection schedule based on the preventive measures.
- .5 The contractor must draw up an effective emergency plan based on the characteristics and constraints of the site and its surroundings. Submit the emergency plan to all parties concerned, pursuant to the provisions of 1.2. The emergency plan must include:
  - .1 Evacuation procedure;
  - .2 Identification of resources (police, firefighters, ambulance services, etc.);
  - .3 Identification of persons in charge at the site;
  - .4 Identification of those with first-aid training;
  - .5 Training required for those responsible for applying the plan;
  - .6 Any other information needed, in the light of the site characteristics.
- .6 For all work involving risk of drowning, conform to following requirements:
  - .1 Comply with the Safety Code for the Construction Industry, paragraph 2.10.13.
  - .2 Ensure that required life vests are conforming to:
    - .1 CAN/GGSB-65.7-2007, Life Jackets, Inherently Buoyant published by the Canadian General Standards Board (CGSB).
    - .2 Or exceptions to be approved by Transport Canada.
  - .3 Obtain and submit to Departmental Representative a letter of compliance issued by Transport Canada for approval of any craft (transportation, rescue, inspection or other) prior to commencement of work
  - .4 Ensure that a rescue craft is moored, in the water and available for every shift. When craft is accessible by land, it can be used by several work locations provided that distance between each work location and craft is less than 100 metres.

- .5 Ensure that craft is equipped with a motor powerful enough to travel upstream.
  - .6 Ensure that craft has required characteristics to carry individuals likely to participate in a rescue operation.
  - .7 Ensure that craft is available for personnel at all times in case of emergency.
  - .8 Ensure that a qualified individual is available to operate rescue equipment. Individual must be qualified to operate recreational craft, depending on length of craft used.
  - .9 Establish written rescue procedures containing the information below and ensure that all personnel concerned by these procedures have received the necessary training and information to apply them.
    - .1 Complete descriptions of the procedures, including responsibilities of individuals permitted access to place of work.
    - .2 Location of rescue equipment.
  - .10 When place of work is a landing wharf, dock, jetty, pier or other similar structure, install a ladder with at least two rungs below surface of water on front of structure every 60 metres. This measure also applies to construction projects. In this case, a temporary (or portable) ladder can be used and removed at end of work if Owner does not have basic facilities. But we have to notify the owner that site is not in accordance with the Canada Labour Code, Part 2.
- .7 For diving work, conform to the following requirements:
- .1 Professional divers must apply the Standards of the CAN/CSA Z275 related to diving work:
    - .1 Z275.2 - Occupational safety code for diving operations
    - .2 Z275.4 - Competency standard for diving, hyperbaric chamber, and remotely operated vehicle operations
    - .3 Z275.5 - Occupational diver training
  - .2 The Contractor must ensure that the diver company has following staff : :
    - .1 An active diver who will be connected to the surface;
    - .2 A stand-by diver ready to intervene;
    - .3 Tender.
    - .4 Diving supervisor;
  - .3 Meet the qualifications of divers under Article 312.8 of the regulation on health and safety (CNESST) - Training of members of the diving team:
    - .1 Within 12 months following June 10th, 2010, each member of the diving team must, depending of diving method and to function it performs: receive a professional diving training according to Occupational diver training standard, CSA -Z275.5-05 and hold a certificate issued by an eligible educational institution by Ministère de l'Éducation, du Loisir et du Sport that provide such training or by an educational institution recognized by a professional diving to CNESST or hold a recognition of competences according to CAN/CSA Z275.4 Occupational safety code for diving operations issued by such institution or organization;

## **1.9 RESPONSIBILITIES**

- .1 Assume responsibility of health and safety of those present on the site, as well as the protection of property located on the site; assume also, in contiguous areas to the construction site, the protection of people and the environment insofar as they are affected by the work.
- .2 Respect, and ensure respect by employees, security requirements set out in the contract Documents, orders, laws and local regulations, territorial, provincial and federal law applicable, as well as the health and safety plan for the site.
- .3 Take all necessary measures to ensure application of and compliance with the safety and health requirements of the contract documents, applicable federal and provincial regulations and standards as well as the site-specific safety program, complying without delay with any order or correction notice issued by the Commission de la santé et de la sécurité du travail.
- .4 No matter the size of the construction site or how many workers are present at the workplace, designate a competent person to supervise and take responsibility for health and safety
- .5 Take all necessary measures to ensure application of and compliance with the safety and health requirements of the contract documents, applicable federal and provincial regulations and standards as well as the site-specific safety program, complying without delay with any order or correction notice issued by the Commission de la santé et de la sécurité du travail.
- .6 Take all necessary measures to keep the site clean and in good order throughout the course of the work

## **1.10 COMMUNICATIONS AND POSTING**

- .1 Make all necessary arrangements to ensure effective communication of safety and health information at the site. As they arrive on site, all workers must be informed of their rights and obligations pertaining to the site specific safety program. The Contractor must insist on their right to refuse to perform work which they feel may threaten their own health, safety or physical integrity or that of other persons at the site. The Contractor must keep and update a written record of all information transmitted with signatures of all affected workers.
- .2 The following information and documents must be posted in a location readily accessible to all workers:
  - .1 Notice of site opening;
  - .2 Identification of Principal Contractor;
  - .3 Company OSH policy;
  - .4 Site-specific safety program;
  - .5 Emergency plan;
  - .6 Data sheets for all hazardous material used at the site;
  - .7 Minutes of site committee meetings;
  - .8 Names of site committee representatives;
  - .9 Names of those with first-aid training;

.10 Action reports and correction notices issued by the CNESST.

### **1.11 CONFORMITY REQUIREMENTS**

- .1 Comply with the labour act : Loi sur la santé et la sécurité du travail, L.R.Q., c. S-2.1, et au Code de sécurité pour les travaux de construction, c. S-2.1, r. 4.
- .2 Comply with the Regulations on health and safety at work made under the Canada Labour Code

### **1.12 UNFORESEEN CIRCUMSTANCES**

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

### **1.13 DOCUMENTS DISPLAYING**

Ensure that documents, articles, orders, and relevant notices are displayed prominently on the site, in accordance with the laws and to the province and in consultation with the Departmental Representative.

### **1.14 NON-COMPLIANCES FIXING**

- .1 When a specified in the quote and no identifiable source of danger during the preliminary inspection of the site appears by the fact or during the execution of the work, the contractor must immediately stop work, implement temporary protection measures for workers and the public, and prevent the departmental representative orally and in writing. Subsequently, the contractor shall make the necessary changes to the prevention program so that the work can resume safely.
- .2 Immediately take the necessary steps to correct situations deemed non-compliant, in terms of health and safety, by the competent authority or by the departmental representative.
- .3 Provide to the departmental representative a written report measures taken to correct the situation in the event of non-compliance in health and security. The representative of the Department may order the stop work if the contractor does not have the necessary corrections with regard to the non-compliant health and safety conditions considered.

### **1.15 INSPECTION OF SITE AND CORRECTION OF HAZARDOUS SITUATIONS**

- .1 Inspect the work site and complete the site inspection sheet at least once a week.
- .2 Immediately take all necessary measures to correct any lapses from legislative or regulatory requirements and any hazards identified by a government inspector, by the Departmental Representative, by the site safety and health coordinator or during routine inspections.
- .3 Submit to Departmental Representative written confirmation of all measures taken to correct lapses and hazardous situations.



- .4 Give the safety officer or, where there is no safety officer, the person assigned to safety and health responsibilities, full authority to order interruption and resuming of work as and when deemed necessary or desirable in the interests of safety and health. This person should always act so that the safety and health of the public and site workers and environmental protection take precedence over cost and scheduling considerations.
- .5 Without limiting the scope of sections 1.8 and 1.9, Departmental Representative may order cessation of work if, in his/her view, there is any hazard or threat to the safety or health of site personnel or the public or to the environment.

**1.16 BLASTING**

- .1 s/o

**1.17 CARTOUCHES DEVICES**

- .1 s/o

**1.18 WORK STOPS**

- .1 Priority to the health and safety of the public as well as the site personnel, and the protection of the environment, on issues related to the cost and timing of the work.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1           General**

**1.1               SUBMITTALS**

- .1       Submittals: in accordance with Section 01 33 00 - Submittal Procedures.

**1.2               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.

**1.3               DOCUMENTS/ÉCHANTILLONS À SOUMETTRE POUR  
APPROBATION/INFORMATION**

- .1       Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .1       Product Data:
  - .1       Submit manufacturer's instructions, printed product literature and data sheets.
  - 2.       Submit 2 copies of WHMIS MSDS in accordance with Section 01 35 29 - Health and Safety Requirements.

**1.4               FIRE**

- .1       Fire and waste material burning are prohibited.

**1.5               DISPOSAL OF WASTES**

- .1       Do not bury rubbish and waste materials on site unless approved by Departmental Representative.
- .2       Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.
- .3       Grade and classify all reusable demolition materials from wharf to manage their future utilisation or disposal in compliance with all applicable environmental regulations.
- .4       All necessary installations for the use of grading and classification of reusable or disposal materials must be plan out of work site and in a safe and predetermined area.
- .5       Reusable or recyclable materials from demolition are as follows:
  - .1       Stone
- .6       Information on managing demolition material is found in Section 01 74 21 – Construction/Demolition Waste Management
- .7       Contractor shall gradually dispose of non-reusable material from demolition off work site to an authorized site.

- .8 Waste materials from demolition and non reusable in the new structure shall be recycle if possible, and if not, the site of disposal shall be approved by the Quebec Ministère de l'Environnement et de la Lutte contre les Changements Climatiques (MELCC). Upon request, the department may provide information on the sites in operation. This includes any dry material, waste or rubbish from demolition or construction.
- .9 Contractor shall submit a copy of official authorization and permits prior to seek Departmental Representative's authorization to remove waste materials from work site.
- .10 Dispose of contaminated waste and soils according to Québec's regulation and with Québec's Soil Protection and Rehabilitation of Contaminated Sites Policy.

## **1.6 WORK ADJACENT TO WATERWAYS**

- .1 Waterways shall be kept free of excavated fill, waste material and debris.
- .2 Do not use banks or waterway beds material for borrow.
- .3 Do not dump construction material, waste or debris in waterways.
- .4 Cleaning of equipment in the water is prohibited.
- .5 Service and refuel vehicles at least 30 m from bank.
- .6 Do not store petroleum products or any other hazardous materials less than 30 m from bank.
- .7 If for some reasons certain equipment or hazardous products, implying hazardous material handling, should stay beneath 30 m from waterways, Contractor shall submit a contingency plan to the Departmental Representative and get it approved prior to beginning of work. The plan will provide, without being limited to, details as follows:
  - .1 Designated inner limits of work area for the use of operations;
  - .2 Handled or stored hazardous products (ex. diesel, waste oils, etc.);
  - .3 Containment methods used in order to limit contamination during maintenance and refuelling of equipment and vehicles (in case of oil leakage);
  - .4 The presence of emergency equipment in case of spill near supplying zone and maintenance area.
  - .5 The procedure for hazardous spill.
  - .6 A list of contacts in case of hazardous spill.
  - .7 If generators must be used, make sure that the fuel tank of each generator is with double walls and that it is installed on an impermeable floor with raised kerb to avoid any discharge.
- .8 Before work begins and after it is completed, the Contractor shall provide, at its own expense, a characterization of the chemical quality of soil on the site used for refuelling, maintenance and storage of machinery, heavy equipment and storage of demolition and construction materials.
- .9 Soil characterization shall be performed by a recognized firm in accordance with the procedures specified by the MELC and CCME. The sampling plan and protocol shall be approved by the Departmental Representative.

- .10 In the event of soil contamination in the targeted areas as a result of project-related activities, the site shall be restored to comply with its intended use, and the contaminated soil shall be disposed of at an MELC-authorized site.

## 1.7 POLLUTION CONTROL

- .1 Maintain temporary facilities to prevent erosion and pollution, and implemented under this contract.
- .2 Control emissions from equipment and plant to local authorities emission requirements.
- .3 Prevent fine materials and other extraneous materials from contaminating air and water beyond work site.
- .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Indications of Departmental Representative, water the dry materials.
- .5 Control dust on temporary roads.
- .6 Materials used shall be inert and exempt from contaminants.
- .7 Use machinery in good operating condition to avoid grease, oil or fuel leaks. Submerged equipment parts shall be clean and free of leaks.
- .8 Perform service and verifications on all machineries (excavator, crane, etc) by a qualified mechanical before arrival at site. Ensure there are no fuel, oil or grease leaks, and silencer must be in good condition. Repair non-compliant equipment as rapidly as possible (noise or leaks).
- .9 Immediately recover any contaminant spill in the environment and dispose of it in accordance with applicable legislation.
- .10 Maintain absorbent materials on site at all times for rapid intervention in case of hazardous spill. Know how to use emergency equipment in case of accidental spill. Report any oil spill or other environmental incident to Departmental Representative and authorities having jurisdiction. Recover hydrocarbons and contaminated soil and dispose of in conformance with applicable legislation.
- .11 L'Entrepreneur devra fournir un plan d'urgence relatif à un déversement environnemental, avec liste des intervenants incluant leur numéro de téléphone.
- .12 Keep on site suitable emergency equipment in case of an accidental spill and ensure the appropriate use of it.
- .13 Keep on site, near the work area and near the supplying zone established, an emergency spill response kit. The emergency spill response kit shall contain absorbent material in adequate quantities to remove petroleum from site.
- .14 In the event of a hydrocarbons spill or other hazardous material, the Contractor must advise Departmental Representative and authorities having jurisdiction mentioned in the emergency plan. Report immediately the situation to Environment Canada Emergency services (1-866-283-2333), Environment Emergency of Québec (1-866-694-5454) for an on land spills and to Canadian Coast Guard- Marine Accidental Spill Incidents (1-800-363-4735).
- .15 Wasted oils and other contaminated wastes shall be managed in compliance with effective regulation. This included storage at site, transportation and elimination.

- .16 Do not dispose of volatile materials such as mineral oils and oil or paint thinner in rivers, storm-water or sewers.
- .17 Any hazardous waste generated on the work site will have to be conveyed to a well-authorized disposition site by MELC.
- .18 Hazardous waste storage and transport will have to be done in accordance with the regulation in force in order not to contaminate the environment.
- .19 Prior to conveying hazardous waste from work site, the Contractor shall obtain Departmental Representative authorization by showing a copy of all licenses obtained from the owners or hazardous waste disposal site authorities

## **1.8 TRANSPORT OF MATERIALS**

- .1 Materials may be transported on public roads to construction site according to city regulation.
- .2 Ensure proper operation of trucks used. Any trucks or other means of transport creating sound levels that Departmental Representative deems to exceed standards shall cease transporting materials or be repaired or modified to be made acceptable.
- .3 Contractor shall use adequate signalization and co-operate with municipality, Departmental Representative and other authorities having jurisdiction to minimize the impact of transportation on the daily lives of residents in area adjacent to truck route and construction site.
- .4 Use a sheet to cover granular material during transportation.
- .5 Limit traffic for the transportation of material to roads and areas identified in the specifications.
- .6 Maintain the roads used in good condition at all times and take the necessary measures to ensure they can be safely used and crossed by other users.
- .7 Upon work completion, promptly restore the roads to a condition that is at least equal to their original state.

## **1.9 PROTECTION OF THE AQUATIC ENVIRONMENT IN THE WORK AREA**

- .1 The work area should be clearly defined.
- .2 Ensure workers are informed of environmental and safety measures.
- .3 Do not store stone or debris from demolition on bank.
- .4 As work progresses, completely clean bank to recover all debris (wood) from demolition of existing wharf.
- .5 The Contractor shall minimize the work in aquatic environment and on bank. At anytime the heavy equipment will be allowed the move outside the work area.
- .6 For underwater works required, the Contractor must assure that all equipment pieces involved are free of contamination and of any oil leakage.
- .7 Land-based equipment storage shall be made in anytime above high tides level and as conditions described in section 1.6 – Work adjacent to waterways.
- .8 Employ a method for removing rocks that involves minimal contact between the sediments and machinery to avoid creating suspended matter. Notably, these rocks must

be raised slowly and hoisted directly to the surface, taking care not to drag them on the seabed.

- .9 Carefully backfill the materials on the bottom, especially for the furthest parts, in order to minimize the resuspension of suspended solids (SS); deposit rather than drop the rocks on the seabed.
- .10 Work shall be performed when the wave height is equal to or less than 1.5 m in order to minimize the resuspension of SS, as stable manoeuvring would become more difficult with bigger waves.
- .11 Keep navigation near the area to a minimum in order to minimize the ripple effect caused by passing boats on the sediment.
- .12 When conditions are right, carry out the riprap work or install the crib structures in a dry environment, or at low tide, which significantly mitigates the impacts on surface water quality by limiting SS and noise propagation.
- .13 When weather conditions deteriorate, work must be avoided to prevent the dispersion of material resuspended by the work;

#### **1.10 NOISY WORKS**

- .1 Noisy works are prohibited at night, unless absolutely necessary.

#### **1.11 NOTICE TO SHIPPING**

- .1 Issue a Notice to Shipping regarding date and duration of work, in accordance with the Navigation Protection Act.
- .2 Set up and meet requirements of license emitted under the terms of the Navigation Protection Act

#### **1.12 WORK MONITORING**

- .1 Mitigation measures from the assessment report, and those mentioned in the present section will be subject to constant monitoring on work site by a Departmental Representative.
- .2 The Department Representative will complete an environmental control data record of work site. This control data record will be given to Contractor on a weekly basis.

#### **1.13 NON-COMPLIANCE NOTICE**

- .1 Departmental Representative 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 Departmental Representative of proposed corrective action and take such action for approval by Departmental Representative.
  - .1 Take action only after receipt of written approval by Departmental Representative.
- .3 Departmental Representative 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 2 Product**

**2.1 NOT USED**

- .1 Not used.

**Part 3 Execution**

**3.1 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - 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 in accordance with Section 01 74 11 - Cleaning.
- .4 Waste Management: separate waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

**FIN DE LA SECTION**

**Part 1           General**

**1.1               REFERENCES AND CODES**

- .1 All work shall meet or exceed the requirements of the latest edition of the standards of the Canadian Government Specifications Board (CGSB), the Canadian Standards Association (CSA), the National Building Code of Canada (NBC), the American Society for Testing and Materials (ASTM), the Canadian Standard Association (CSA), the American Concrete Institute (ACI), Cahier des charges et Devis généraux (CCDG) from Ministère des Transports du Québec and the other standards and codes referred to herein, including amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
- .2 Where conflict arises in the course of work, the strictest standards shall apply.
- .3 At any time when the specifications refer to standards, standard to be applied shall be the latest edition available, regardless of the edition designated in specification.
- .4 Meet or exceed requirements of:
  - .1 Contract documents.
  - .2 Specified standards, codes and referenced documents.

**1.2               LAWS, REGULATIONS AND DECREES**

- .1 Contractor shall conform to all rights and privileges of others, and to all federal, provincial and municipal laws, regulations and decrees; he must also make sure that his employees, in law or in fact, and his subcontractors conform to same.
- .2 The applicable permits and approvals will have to be obtained by the Contractor before the beginning of work.

**1.3               PERMITS, FEES AND TAXES**

- .1 Contractor shall give all notices, obtain and pay all fees and construction permits for the demolition and for construction, and for all other services, as required by the authorities having jurisdiction.
- .2 Contractor shall be responsible for all damage and costs resulting from default to obtain these fees and permits.

**Part 2           Products**

**2.1               NOT USED**

- .1 Not Used.



**Part 3            Execution**

**3.1                NOT USED**

.1                Not Used.

**END OF SECTION**

**Part 1            General**

**1.1                RELATED SECTIONS**

- .1        Section 01 33 00 – Submittal procedures
- .2        Section 01 77 00 – Closeout procedures

**1.2                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 inspections, approvals or special tests required by Departmental Representative or by law of Place of Work.
- .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.

**1.3                INDEPENDENT INSPECTION AGENCIES**

- .1        Provide equipment required for executing inspection and testing by appointed agencies.
- .2        Employment of inspection/testing agencies does not remove responsibility to perform Work in accordance with Contract Documents and regarding quality insurance requirements about quarry stone quality that is contractor's responsibility.
- .3        If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative. Pay costs for retesting and reinspection.

**1.4                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.

**1.5                PROCEDURES**

- .1        Notify appropriate agency and Departmental Representative 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.

**1.6 REJECTED WORK**

- .1 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 Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .2 Make good other Contractor's work damaged by such removals or replacements promptly.
- .3 If in opinion of Departmental Representative it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Departmental Representative 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 Departmental Representative.

**1.7 REPORTS**

- .1 Submit 2 copies of inspection and test reports to Departmental Representative
- .2 Provide copies to manufacturer or fabricator of material being inspected or tested.

**1.8 MOCK-UPS**

- .1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of Sections required to provide mock-ups.
- .2 Construct mock-ups in locations approved by the Departmental Representative.
- .3 Prepare mock-ups for Departmental Representative review with reasonable promptness and in orderly sequence, to not cause delays in Work.
- .4 Failure to prepare mock-ups in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .5 If requested, Departmental Representative will assist in preparing schedule fixing dates for preparation.
- .6 Remove mock-up at conclusion of Work or when acceptable to Departmental Representative.
- .7 Mock-ups may remain as part of Work.
- .8 Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3            Execution**

**3.1                NOT USED**

.1            Not Used.

**END OF SECTION**

**Partie 1      General**

**1.1            RELATED SECTIONS**

- .1      Section 01 45 00 - Quality Control.

**1.2            QUALITY CONTROL**

- .1      Contractor obligations:
  - .1      The Contractor is responsible for quality control and shall establish and maintain an effective quality control program. This includes the personnel, procedures and organization required to produce a final product that meets contract requirements. Quality control must cover all construction operations, both on the work site and elsewhere, and must be adapted to the proposed construction sequence.
  - .2      The Contractor shall monitor quality control for suppliers, manufacturers, products, services, work site conditions and work activities to produce the specified quality of work.
  - .3      The Contractor shall comply with manufacturers' instructions for each step of the construction sequence.
  - .4      If manufacturers' instructions conflict with contract documents, the Contractor shall request clarification from the Departmental Representative before proceeding.
  - .5      The Contractor shall comply with the specified standards for the minimum quality of work unless there are tolerances for codes or prescribed requirements that require stricter standards or more detailed work.
  - .6      The Contractor shall perform the work with qualified personnel to produce work of the prescribed quality.

**1.3            TOLERANCES**

- .1      The Contractor shall monitor the control of tolerances to produce acceptable work. The Contractor shall not allow tolerances to accumulate.
- .2      The Contractor shall comply with manufacturer and specification tolerances. If manufacturer tolerances conflict with contract documents, the Contractor shall request clarification from the Departmental Representative before proceeding.

**1.4            REFERENCES**

- .1      For products or work prescribed by an association, a construction trade or other recognized standards, the Contractor shall comply with the standards unless more stringent requirements are prescribed or required by applicable codes.
- .2      The Contractor shall comply with the reference standards in effect at the time of receipt of bids, except where a specific date is set by the code.
- .3      The Contractor shall obtain copies of the standards if required by the specification sections.

- .4 Neither contractual relationships nor the duties and responsibilities of the contract parties or those of the Departmental Representative can change with respect to the contract documents by mention or suggestion of any reference document.

**Partie 2 Products**

**2.1 NOT USED**

- .1 Not used.

**Partie 3 Execution**

**3.1 QUALITY CONTROL PHASES**

- .1 Quality control is a means by which the Contractor can ensure that the construction, including for subcontractors and suppliers, fulfills contract requirements. Quality control must cover all construction operations, both on the work site and elsewhere, and correspond to the proposed construction sequence. It must include at least three control phases to be carried out by the Contractor's quality control system manager for all definable portions of the work, as follows:

- .1 **Preparatory phase:** This phase must be completed before work begins for each definable portion of work and must include:

- .1 A review of each paragraph of the applicable specifications.
- .2 A review of the contract plans.
- .3 A review to ensure all materials and/or equipment have been tested, submitted and approved.
- .4 A review to ensure the required control inspection and testing have been planned.
- .5 A review of the work area to ensure that all required preliminary work has been performed and is consistent with the contract.
- .6 A physical examination of materials, equipment and work samples required to ensure they are available, in accordance with the approved shop drawings or on the required bid submission date, and are properly stored.
- .7 A discussion on construction work procedures, including necessary changes to resolve recurring problems.
- .8 Construction tolerances in documents and work standards for this work phase.
- .9 A review to ensure the Departmental Representative has approved the portion of the quality control plan for the work to be done.

- .2 **Initial phase:** This phase must be carried out at the beginning of a definable portion of work. The following must be done:

- .1 A review of the completed work to ensure it complies with contract requirements.
  - .2 Review of overall compliance with the contract: Verify inspection and testing required by quality control.
  - .3 Establish the level of qualification for the work to be carried out and make sure it meets the minimum acceptable standards for the work. Compare with test sections and approved sample panels, where applicable.
  - .4 Correct any differences.
  - .5 The initial phase should be repeated for each new team to work on the site or whenever the prescribed minimum acceptable standards are not met.
- .3 **Monitoring phase:** Daily checks must be performed to ensure continued compliance with contract requirements, including control testing, until the specific portion of the work is completed. Reviews must be recorded in the Contractor's quality control documents and submitted to the Departmental Representative. Final monitoring reviews must be performed and all problems must be corrected before the start of a new portion of work that could be affected by the defective work. The Contractor shall not build on or conceal non-compliant work.

### 3.2 STONE MATERIAL CONTROL PLAN

- .1 The Contractor is responsible for establishing and maintaining a quality control plan for quarry materials to ensure that all quarry materials incorporated into the structure comply with specifications.
- .2 Section 35 31 23 – Rubble Mound Breakwaters outlines the specific requirements for the rock control plan to be implemented by the Contractor for this project.

### 3.3 SURVEY CONTROL, PROJECT LAYOUT AND STONE PLACEMENT SURVEYS

- .1 The Contractor is responsible for establishing and maintaining all land survey controls required to perform the work as described in Section 01 71 00 – Examination and Preparation.
- .2 The Contractor is responsible for the project location, including establishing and maintaining the survey control line, and for construction surveys necessary to perform the work required by the contract documents.
- .3 The Contractor is responsible for conducting spot-check surveys for all work performed on-site to ensure compliance with requirements. Spot-check surveys will be used to determine payment amounts and must be performed in the presence of the Departmental Representative, unless the latter determines otherwise.

### **3.4 COMPLETION INSPECTION**

- .1 Once all the work is completed, the Contractor's quality control manager and the Departmental Representative shall inspect the work and list the elements that are inconsistent with the plans and specifications. The Contractor shall provide an estimated date on which the Contractor's quality control manager and personnel will conduct a second inspection to ensure all defects have been corrected and shall notify the Departmental Representative of the date.

### **3.5 DOCUMENTATION**

- .1 The Contractor shall maintain records of operations, activities and quality control tests conducted, including work carried out by subcontractors and suppliers. These records must be in an acceptable format and must include factual evidence that the required activities and/or quality control testing have been carried out, including, but not limited to, the following:
  - .1 The Contractor/subcontractor and their area of responsibility
  - .2 Testing and/or control activities conducted with results and references to plan and/or specification requirements
  - .3 Identification of elements submitted and reviewed with contract reference
  - .4 Conflicts with plans and/or specifications
  - .5 Contract plans as created, including full set of contract plans marked in red to indicate all conditions differing from original plans
  - .6 Shop drawings having received final approval

**END OF SECTION**



**Part 1            General**

**1.1                RELATED SECTIONS**

- .1        Section 01 51 00 - Temporary Utilities
- .2        Section 01 56 00 - Temporary Barriers and Enclosures
- .3        Section 01 74 11 – Cleaning

**1.2                ACTION AND INFORMATIONAL SUBMITTALS**

- .1        Submittals in accordance with Section 01 33 00 - Submittal Procedures.

**1.3                INSTALLATION AND REMOVAL**

- .1        Provide construction facilities in order to execute work expeditiously.
- .2        Remove from site all such work after use.

**1.4                HOISTING**

- .1        Provide, operate and maintain hoists required for moving of workers, materials and equipment and provide maintenance and use of hoists.
- .2        Hoist to be operated by qualified operator.

**1.5                SITE STORAGE/LOADING**

- .1        Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products and materials.
- .2        Do not load or permit to load any part of Work with weight or force that will endanger Work.
- .3        Before storing equipment or materials on-site, the Contractor shall obtain written authorization from Harbour Authority.

**1.6                ON-SITE PARKING**

- .1        Parking will be permitted on site if it does not disrupt performance of Work. The storage area planned for the Contractor can be used for this purpose.
- .2        If authorized to use existing roads for access to project site, maintain such roads for duration of Contract and repair damages resulting from Contractors' use of roads
- .3        Provide and maintain adequate access to project site.
- .4        Clean runways where used by Contractor's equipment.

**1.7                EQUIPMENT, TOOL AND MATERIALS STORAGE**

- .1        Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.
- .2        Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with work activities.

**1.8 SANITARY FACILITIES**

- .1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.
- .2 Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.
- .3 Keep premises and areas clean.

**1.9 PROTECTION AND MAINTENANCE OF TRAFFIC**

- .1 Provide access and temporary relocated roads as necessary to maintain traffic.
- .2 Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by Departmental Representative.
- .3 Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs
- .4 Protect travelling public from damage to person and property.
- .5 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.
- .6 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.
- .7 Construct access and haul roads necessary.
- .8 Haul roads: constructed with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic shall be avoided.
- .9 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.
- .10 Dust control: adequate to ensure safe operation at all times.
- .11 Location, grade, width, and alignment of construction and hauling roads: subject to approval by Departmental Representative.

**1.10 ELECTRICAL SERVICES**

- .1 Supply necessary electrical services on work site.
- .2 Assume the cost of these electrical services, whether for lighting, heating or other uses.
- .3 Assume the cost of installation and removal of these electrical services
- .4 The installation of electrical services shall be abide by applicable laws and regulations

**1.11 TEMPORARY AIDS TO NAVIGATION AND MARKER BUOYS**

- .1 Provide temporary aids to navigation and marker buoys to delineate work areas acceptable to Canadian Coast Guard and Harbour Authority.
- .2 Coordinate with the Local Authorities to provide Notices to Mariners regarding navigation requirements throughout the duration of Work

**1.12 CLEANING**

- .1 Remove construction debris, waste materials, packaging material from work site daily.
- .2 Clean dirt or mud tracked onto paved or surfaced roadways.
- .3 Store materials resulting from demolition activities that are salvageable.
- .4 Stack stored new or salvaged material not in construction facilities.
- .5 Clean work area progressively.
- .6 Once Works is completed, remove machinery/tools and evacuate waste to leave the place in order.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL**

- .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, that complies with requirements of authorities having jurisdiction
- .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
- .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

**END OF SECTION**

**Part 1            General**

**1.1                RELATED SECTIONS**

- .1      Section 01 14 00 – Work Restrictions
- .2      Section 01 51 00 – Temporary Utilities
- .3      Section 01 52 00 – Construction Facilities

**1.2                REFERENCE STANDARDS**

- .1      Canadian General Standards Board (CGSB)
  - .1      CGSB 1.59, Alkyd Exterior Gloss Enamel.
  - .2      CAN/CGSB 1.189 , Exterior Alkyd Primer for Wood.
- .2      Canadian Standards Association (CSA International)
  - .1      CSA-O121, Douglas Fir Plywood.

**1.3                INSTALLATION AND REMOVAL**

- .1      Provide temporary controls in order to execute Work expeditiously.
- .2      Remove from site all such work after use.

**1.4                GUARD RAILS AND BARRICADES**

- .1      Provide secure, rigid guard rails and barricades around deep excavations.
- .2      Provide items as required by governing authorities.

**1.5                ACCESS TO SITE**

- .1      Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work.

**1.6                FIRE ROUTES**

- .1      Maintain access to property including overhead clearances for use by emergency response vehicles.

**1.7                PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY**

- .1      Protect surrounding private and public property from damage during performance of Work.
- .2      Be responsible for damage incurred.

**1.8                PROTECTION OF WORK FINISHES**

- .1      Provide protection for finished and partially finished building finishes and equipment during performance of Work.
- .2      Provide necessary screens, covers, and hoardings.

- .3 Be responsible for damage incurred due to lack of or improper protection.

**1.9 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1        General**

**1.1        RELATED REQUIREMENTS**

- .1        Section 01 32 16 – Construction Progress Schedules - Bar (Gantt) Charts

**1.2        REFERENCES**

- .1        Department's identification of existing survey control points and property limits.

**1.3        QUALIFICATIONS OF SURVEYOR**

- .1        Qualified registered technician, licensed to practice in Place of Work.

**1.4        SURVEY REFERENCE POINTS**

- .1        All elevation indicated on plans refer to chart datum.
- .2        Contractors must refer to tide tables published by the Department of Fisheries and Oceans in order to ascertain the effect of tides on the work. Also consider waves and wind that raise water level near structures.
- .3        Locate, confirm and protect control points prior to starting site work. Preserve permanent reference points during construction.
- .4        Make no changes or relocations without prior written notice to Departmental Representative.
- .5        Report to Departmental Representative when reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
- .6        Require surveyor to replace control points in accordance with original survey control.

**1.5        SURVEY REQUIREMENTS**

- .1        Establish permanent benchmarks on site, referenced to established benchmarks by survey control points. Record locations, with horizontal and vertical data, in Project Record Documents.
- .2        Establish lines and levels, locate and lay out, by instrumentation.
- .3        Mark site prior to Works.
- .4        The Contractor shall take on the entire responsibility for the marking out of the work and the complete execution in accordance with the location, the lines and the levels indicated.
- .5        Provide the necessary material for the marking out and the implantation.
- .6        Provide the required material such as rules and gauges to ease the work of the Departmental Representative concerning the inspection of the works.

**1.6        EXISTING SERVICES**

- .1        Before commencing work, establish location and extent of service lines in area of Work and notify Departmental Representative of findings.

- .2 Remove abandoned service lines. Cap or otherwise seal lines at cut-off points as directed by Departmental Representative

### **1.7 LOCATION OF EQUIPMENT AND FIXTURES**

- .1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.
- .2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.
- .3 Inform Departmental Representative of impending installation and obtain approval for actual location.
- .4 Submit field drawings to indicate relative position of various services and equipment when required Departmental Representative.

### **1.8 RECORDS**

- .1 Maintain a complete, accurate log of control and survey work as it progresses.
- .2 On completion of foundations and major site improvements, prepare a certified survey showing dimensions, locations, angles and elevations of Work.
- .3 Record locations of maintained, re-routed and abandoned service lines.

### **1.9 SUBMITTALS**

- .1 Submit signed certificate certifying and noting elevations and locations of completed Work that conform and do not conform with Contract Documents.

### **1.10 SUBSURFACE CONDITIONS**

- .1 Promptly notify Departmental Representative in writing if subsurface conditions at Place of Work differ materially from those indicated in Contract Documents, or a reasonable assumption of probable conditions based thereon.
- .2 After prompt investigation, should Departmental Representative determine that conditions do differ materially; instructions will be issued for changes in Work as provided in Changes and Change Orders.

### **Part 2 Products**

#### **2.1 NOT USED**

- .1 Not used.

### **Part 3 Execution**

#### **3.1 NOT USED**

- .1 Not used.

**END OF SECTION**

**Part 1            General**

**1.1                RELATED SECTIONS**

- .1        Section 01 74 21 - Construction/demolition Waste Management
- .2        Section 01 77 00 - Closeout Procedures

**1.2                WORK SITE CLEANLINESS**

- .1        Maintain work site in tidy condition, free from accumulation of waste products and debris.
- .2        Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative
- .3        Do not burn waste materials on site, unless approved by Departmental Representative.
- .4        Keep work site access road free of ice and snow. Place snow only at indicated areas or evacuate out of work site as indicated.
- .5        Make arrangements to obtain all necessary licences from authorities for waste disposal.
- .6        Provide on-site containers for collection of waste materials and debris.
- .7        Provide and use marked separate bins for recycling. Refer to Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .8        Dispose of waste materials and debris off-site.
- .9        Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
- .10      Store volatile waste in covered metal containers, and remove from premises at end of each working day.

**1.3                FINAL CLEANING**

- .1        When work is substantially performed, remove surplus products, tools, construction machinery and equipment not required for performance of remaining work.
- .2        Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .3        Prior to final review remove surplus products, tools, construction machinery and equipment.
- .4        Remove waste products and debris including that caused by Owner or other Contractors.
- .5        Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
- .6        Make arrangements to obtain all necessary licences from authorities for waste disposal.
- .7        Inspect finishes, fitments and equipment and ensure specified workmanship and operation.



**1.4 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate waste materials for recycling and reuse in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1            General**

**1.1                RELATED SECTIONS**

- .1            Section 01 33 00 – Submittal Procedures

**1.2                ADMINISTRATIVE REQUIREMENTS**

- .1            Acceptance of Work Procedures:
  - .1            Contractor's Inspection: Contractor: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
    - .1            Notify Departmental Representative in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
    - .2            Request for Departmental Representative inspection.
  - .2            Departmental Representative Inspection:
    - .1            Departmental Representative and Contractor to inspect Work and identify defects and deficiencies.
    - .2            Contractor to correct Work as directed.
  - .3            Completion Tasks: submit written certificates that tasks have been performed as follows:
    - .1            Work: completed and inspected for compliance with Contract Documents.
    - .2            Defects: corrected and deficiencies completed.
    - .3            Equipment and systems: tested, adjusted, balanced and fully operational.
    - .4            Certificates required by Utility companies: submitted.
    - .5            Operation of systems: demonstrated to Owner's personnel.
    - .6            Commissioning of mechanical systems: completed in accordance with Departmental Representative.
    - .7            Work: complete and ready for final inspection.
  - .4            Final Inspection:
    - .1            When completion tasks are done, request final inspection of Work by Departmental Representative, and contractor
    - .2            When Work incomplete according to Departmental Representative, complete outstanding items and request re-inspection.
  - .5            Declaration of Substantial Performance: when Departmental Representative considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.
  - .6            Final Payment:
    - .1            When Departmental Representative considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.

- .2 When Work deemed incomplete by Departmental Representative, complete outstanding items and request re-inspection.

**1.3 FINAL CLEANING**

- .1 Clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.
- .2 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1            General**

**1.1                RELATED SECTIONS**

- .1            Section 01 33 00 - Submittal Procedures.
- .2            Section 01 74 21 - Construction/Demolition Waste Management And Disposal.

**1.2                MEASUREMENT AND PAYMENT**

- .1            Mobilization/demobilization of equipment will not be measured for payment.
- .2            Construction and maintenance of haul roads will not be measured for payment.

**1.3                REFERENCES**

- .1            American Society for Testing and Materials (ASTM)
  - .1            ASTM C88, Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate.
  - .2            ASTM C117, Standard Test Method for Material Finer than 0.075 mm Sieve in Mineral Aggregates by Washing.
  - .3            ASTM C127, Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate
  - .4            ASTM C136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
  - .5            ASTM C535-e1 Standard Test Method for Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
- .2            Canadian General Standards Board (CGSB)
  - .1            CAN/CGSB-8.1, Sieves, Testing, Woven Wire.
  - .2            CAN/CGSB-8.2, Sieves, Testing, Woven Wire, Metric.

**1.4                SUBMITTALS**

- .1            Samples
  - .1            Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
  - .2            Inform Departmental Representative of proposed source of materials and provide access for sampling at least 3 weeks prior to commencing Work.
  - .3            Submit to Departmental Representative stone's test data for approval.
- .2            **Submit for review by Departmental Representative proposed method of handling stone. Submission to cover phases of handling until final positioning in artificial reef.**
- .3            At least 4 weeks prior to commencing work, Submit work schedule for approval by Departmental Representative.

## **1.5 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Replace defective or damaged materials with new.

## **1.6 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

## **Part 2 Products**

### **2.1 GENERAL**

- .1 All the stones shall comply with the entire range of requirements herein set forth. The Departmental Representative may, at any time during construction and throughout the project, refuse materials at the source or the worksite if they do not meet requirements. Materials delivered to the worksite and rejected either in a stockpile or after placement in the work, shall be removed at Contractor's expense.
- .2 In this project, the control plan and quality control and quality insurance activities shall systematically apply throughout both the quarrying and construction phases.

### **2.2 STONE SOURCES**

- .1 The Contractor is solely responsible for ensuring that the selected supply sources will be able to meet the delivery schedule and produce stones of the required quality in sufficient quantities for the project.
- .2 If, as construction activities unfold, the Contractor is unable to provide acceptable stones in sufficient quantities from the original supply source, he may request an authorisation to use another source. All the expenses resulting from a change in the supply sources, including the required sampling and testing, shall be at Contractor's expense. In addition, no extension of the execution date set for this contract will be allowed.

### **2.3 MATERIALS**

- .1 Rock materials:
  - .1 Stone shall be a rough broken stone from a quarry.
  - .2 The use of round stone is not accepted in any part of the work.
  - .3 All stone shall be resistant to salt water, and of suitable quality to ensure permanence in the structure and in the climate in which it is to be used.
  - .4 Stone shall be a rough broken stone from a quarry. Stone shall be durable, sound and free of cracks, seams and other defects that would tend to increase deterioration from natural causes or result in breakage during handling and/or placement.

- .5 Inclusions of dirt, sand, clay, shale, of quartz or mica, pegmatite, oil or oil-stained stones, rock fines or any organic or other delirious material will not be permitted,
- .6 Maximum petrographic Number: 130.
- .7 All stones of each category to be used shall be evenly distributed into each stone class indicated in specifications.
- .8 Stone from the Magdalen Islands is accepted.
- .9 Categories of stone to supply
  - .1 400 @750 mm
  - .2 200 @400 mm
  - .3 100 @ 200 mm
- .2 Stone sampling and testing method
  - .1 References concerning testing methods are listed above in Section 1.3 - References
  - .2 Stone samples used in laboratory tests shall be typical of the lithologic unit of each category of stone proposed for use in the work of this project.

## **2.4 TRIALS**

- .1 At least three (3) weeks prior to stone production start-up, Contractor shall notify Departmental Representative of proposed source of materials.
- .2 A minimum of two (2) weeks is included in this three (3) weeks period for laboratory tests.
- .3 The Departmental Representative may require other tests during the execution of the work.
- .4 The Department Representative will be responsible for the cost of laboratory trials, otherwise trial show non-conformance.
- .5 Stone samples to be submitted at any time for laboratory testing shall be taken in the presence of the Departmental Representative or of a representative of the designated laboratory.
- .6 Contractor shall submit report of stone delivered on worksite.

**Tableau 1 – Required stone quality testing – Methods and acceptance criteria**

Test name	Test method	Acceptance criteria Imported Stone
<b>Field observations / Visual Inspection / Assessment</b>		
Field examination <sup>1</sup>	ASTM D4992-07	No conglomerates No delirious materials; good to excellent quality for intended use
Petrographic examination <sup>2</sup>	ASTM C295-03	No delirious materials; good to excellent quality for intended use
Watering grade	Visual	1A – fresh, unweathered rock 1B – faintly weathered rock (staining on major discontinuity surfaces)
<b>Laboratory testing</b>		
Bulk specific gravity, SSD	ASTM C127-07	≥2.65
Water absorption <sup>3</sup>	ASTM C127-07	≤1,0%
Water resistance micro-Deval <sup>4</sup>	ASTM D6928-06	≤15%
MgSO4 Soundness	ASTM C88-05	≤1.5% loss after 5 cycles

Notes:

1 The field examination shall include the preparation of a written report that includes a summary of the quarry and proposed quarry development plan as per ASTM D4992-07, including : general lithology, geologic unit and age, source homogeneity, stratigraphic faces; metamorphic and weathering phases; dip, strike and thickness of the bedding; proposed blasting procedure and expected curing time.

2 Petrographic examinations shall be repeated before AND after the MgSO4 soundness testing.  
Petrographic examination shall be summarized in a written report that includes the presence of micro-fractures and/or signs of induced stress (and therefore possible stress release – ref. paragraph 3.2) that may be of concern for the proposed use.

3 Water absorption test shall be repeated on five (5) different pieces of rock.

4 Wear resistance test shall be repeated on two (2) different pieces of rock

## 2.5 STONE SORTING

- .1 Pilot stones indicating the limits of stone size will be weighed and placed near worksite to ease the selection of stone.

## 2.6 TOLERANCE ON WEIGHT AND SHAPE OF STONES

- .1 At least 90% in weight of stones of a category placed in structure shall be comprises between weight limits of the category.
- .2 No more than 5% in weight of stones of a category, shall weight between 0.75 to 1 time the minimal weight required for that category.
- .3 All stone weighting less than 0.75 time the minimal weight or more than 1.25 the maximum weight of the category will be refused, deduced from quantity and transported out of worksite. Fees for transport of refused stone will be to Contractor responsibility.
- .4 Stones of a category have to be uniformly divided into size in all Work, in order to avoid creating sections with concentration of the same size of stone inside a given category.

## **2.7 STONE GRADATION AND SHAPE**

- .1 The methods used for production, transportation and placement must be adjusted to the needs in order to ensure that the materials placed in the final stage are within the prescribe range for weight. Stones must therefore undergo gradation testing and shall not display discontinuities or defects in their individual size ranges.
  - .1 For gradation testing, a random sample of stones must be collected weighing at least 25 times the average weight of stones in the category. Each individual stone in the sample shall be measured over three (3) mutually perpendicular axes. The dimensional ratio and the weight of each stone shall be estimated using the unit weight of the type of rock at hand per unit of volume measured and shall be recorded in a table.
  - .2 In addition, the weight of the whole sample shall be measured. This information is used to produce a “correction factor” to adjust the estimated weight of stones with regard to their actual weight. Each stone in the sample may also be weighed individually. With this data, a gradation chart can be established for the sample.
  - .3 Although it is required that an adequate spreading over the entire range of sizes be obtained each category, at least 50% of the stones – in numbers, shall be heavier than the average weight of the stones.
  - .4 Stones shall display an angular or blocky shape with a maximum 3/1 dimensional ratio (1/d).
  - .5 In each category, only ten percent (10%) of the stones – in numbers, may display a dimensional ratio in excess of 2,5/1.
  - .6 Stones with a dimension ratio comprised between 2.5 and 3.0 shall never be placed flat or under water level.
  - .7 Stones with a dimension ratio over 3 will be refused.

## **2.8 THEORICAL QUANTITIES**

- .1 In order to guide the Contractor in the quantities preparation of his tender, the Department Representative estimates the quantities of each stone category.

## **Part 3 Execution**

### **3.1 PREPARATION**

- .1 Haul roads: construct and maintain haul roads.
- .2 If required, install lights on floating equipment in accordance with international regulations, and maintain on board a radio operator system.
- .3 Install and keep in good state buoys, direction signs, bench marks and traffic lights used to delimit work site.
- .4 Stake and maintain the work based on the proper reference and control points provided by the Departmental Representative. The Contractor shall be responsible for the accuracy of the work in relation to proper reference points, control points and baselines. Obtain written permission from the Departmental Representative before establishing reference points or placing markers on private property and pay all rental fees arising from this



practice. If necessary, repair any damage to private property to the satisfaction of the Departmental Representative and pay all costs arising from this work. Provide all additional control points (over and above those indicated) necessary for the proper execution of operations. Throughout the project, ensure that all control points remain in good condition.

- .5 If necessary, install and maintain in good condition the landmarks used to locate and define the boundaries of designated work areas. The benchmarks used must be appropriate to control work and bathymetric survey operations. Provide the labour and equipment needed for the construction of these benchmarks. Remove the benchmarks once the work is completed.

### **3.2 QUALITY CONTROL DURING PRODUCTION**

- .1 The Contractor shall carry out Quality Control activities throughout the stone production and placement period as required in this section and in section 01 45 00 – Quality control.
- .2 The weighing of stones, or their re-measurement, shall be carried out to ascertain the calculated weight either when the Departmental Representative questions the size of stones or when the inspector deems it appropriate.
- .3 The Contractor is notified that adverse weather conditions (rain, snow, ice, frost and mud) may hide or conceal defects that would otherwise have been identified. Winter conditions may postpone the required inspection of stones until the next Spring. Stones shall not be shipped to the worksite before their inspection.
- .4 Except where gradation tolerances allow it, any broken or cracked stone, stones that do not meet gradation standards and stones that are not correctly placed in the structure shall be removed and replaced with satisfactory stones. This corrective measure is at Contractor's expense. Rejected materials shall be removed from the worksite without delay. Such materials are excluded from measurement and payment.

### **3.3 TRANSPORT AND TEMPORARY STORAGE**

- .1 The Contractor shall take charge of the transportation and storage of the stones and ensure that stockpiles are not contaminated with dirt or other substances; he shall also inhibit size segregation of stockpiled material.
- .2 The Contractor shall implement measures to prevent introduction of invasive alien species in accordance with Section 01 35 43 – Environmental Procedures
- .3 The storage of stones after shipment from the quarry and before permanent placement into the structure shall be submitted to the Departmental Representative for approval.
- .4 Underwater storage of stones is not authorized.

### **3.4 MEASUREMENT OF STONE**

- .1 All stone materials shall be measured for payment by metric ton unit (1 000 kilograms), for material acceptably placed in the work according to certified scale tickets as follows and Section 01 11 11 – Description of Works:

- .1 The Contractor shall proceed to the installation and the certification of an electronic weigh scale at loading site before shipping the stones. Weigh scale shall be of register type and have a sufficient size and capacity to weigh the stone and their means of transportation. The size of weight scale shall allow the receiving of all the wheels of the means of transportation used by the Contractor or the subcontractor.
- .2 The Contractor shall supply each day to the Departmental Representative scale ticket copies for all stones delivered on site, separated by category.

### 3.5 TERMINOLOGY

- .1 In the description of the stone construction, one must refer to the survey control line (CL) and the neat lines. The following definitions shall apply to those items:
  - .1 Survey control line (CL) – Line shown on the contract drawings to which all breakwater surveys shall be referenced;
  - .2 Neat lines – Solid lines shown on the contact drawings which depict the limits of the various types of stone materials. Tolerances for the placement of the stones described in this section are perpendicular to these neat lines.
  - .3 The word “ton” (t) refers to the metric ton (1 m.t. = 1000 kg).

### 3.6 ARTIFICIAL REEFS

- .1 The Contractor is free to choose the construction process. However, he shall be held responsible for any damage caused during construction and shall make good the work at his own expense and to the Departmental Representative’s satisfaction. It would be preferable for the Contractor to place armour stone as work progresses.
- .2 **Stone will be placed using a bottom dumping barge followed by a final set up by an excavator or solely with an excavator. In both cases, the automatic tracking system shall be sufficiently accurate to meet the geometric requirements of reefs indicated on the drawings and specifications.**
- .3 The Contractor shall use suitable equipment to place the stones in the correct location and on the grades and slopes shown on drawings. He shall replace any badly placed stones at his own expense.
- .4 Before placing the stone, ask Departmental Representative to check alignments.
- .5 Place stone to the dimensions, the lines, elevations and the specified levels.
- .6 Setting up the stones in layers until thickness indicated in drawings.
- .7 Do not leave areas without stones. Make sure to cover the entire surface of theoretical reef.
- .8 Place stones so that they are stable.
- .9 Set up stones to obtain a tangle and optimum stability.

### 3.7 DEFORMATION

- .1 In case of deformation of any part of the work during construction or after construction but before acceptance, the Contractor shall remove the displaced materials and rebuild this portion of the structure using either new materials or the displaced materials if deemed appropriate.

### 3.8 TOLERANCES

- .1 **Once the stone is in place, the reef should show a rectangular shape and all categories of stone should form a rectilinear set. A reef with one of the stone categories not in alignment with the whole will not be accepted and will have to be the subject of work (moving stone and reloading) to correct the situation.**
- .2 Surfaces obtained shall not deviate from the lines and grades indicated on the contract drawings in a range of plus or minus the tolerances indicated below. Tolerances are measured perpendicularly to the indicated neat lines.
- .3 Extreme limits of the tolerances given below shall not be continuous in any given direction over five (5) times the average dimension of a stone and/or over more than ten square metres of structure surface area.
- .4 Any section of a stone course built to the upper tolerance limit shall not be in the immediate vicinity of a section built to the lower limit and vice-versa. In other words, transitions between tolerance limits shall be smooth.

MATERIAL	BELOW CHART DATUM
Stone	20 cm

- .5 The above tolerances aim at ensuring that the work is constructed to the required heights, slopes and levels. Placed material that would not meet these requirements shall be removed or reworked as directed by the Departmental Representative.

### 3.9 DEBRIS

- .1 Unless otherwise indicated by the Departmental Representative, all the timbers, the unsatisfactory materials and the debris within the construction zone shall be removed and become the Contractor's property. All the materials shall be disposed of as required in sections 01 35 43 – Environmental Protection and 01 14 00 – Work restrictions.

### 3.10 TURBIDITY CONTROL

- .1 The Contractor shall control stone placement in such way to minimize water turbidity. Contractor operations shall comply with the requirements of Sections 01 35 43 Environmental Protection and 01 14 00 – Work restrictions.

### 3.11 ARTIFICIAL REEF

- .1 Each artificial reef measuring 20 m long by 10 m wide and is divided into 5 rectangular sections with stones of different sizes.
- .2 **A complete multi beam bathymetric survey of 0,1 m precision in X, Y, Z will be made by Contractor, after work, to ensure that the height of the reefs do not exceed lower limit below chart datum required by the Navigation Protection Act of Transport Canada. In the presence of improper height or shape, Contractor shall return to site at its own expense to make the necessary adjustments to avoid**

exceeding the required minimum depth or correct geometry not more than 2 weeks after.

- .3 The contractor shall hire a professional diving company to verify the physical compliance of reefs and their general condition. A written report with video and pictures must be provided to the Departmental

**3.12 VERIFICATION OF REEF COMPLIANCE**

- .1 Soon after reefs construction, the Contractor shall conduct a verification of the general condition and compliance of work by an underwater video description.
- .2 The Contractor shall hire a professional diving company to verify the compliance of reefs and their condition. A written report with video and pictures must be provided to Departmental Representative so works can be paid.

.3 Visual check in Diving

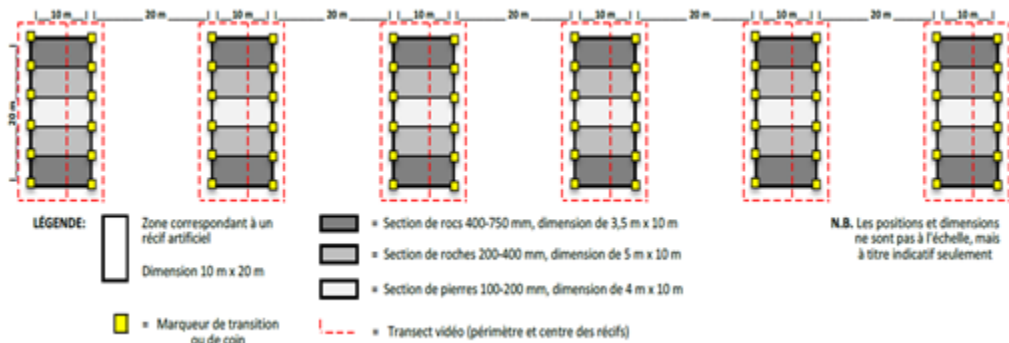
- .1 Each reef shall be documented by scuba diving using video images (perimeter and longitudinal transect through the center of the reef) and observations made by the diver:
  - .1 Reef perimeter: the camera should be oriented to obtain a view of the edge of the reef. The view shall include the transition from the reef to the adjacent substrate and a good part of the reef. The diver will specify, with the help of a hand sign, any change of section (large, medium and small rocks);
  - .2 Longitudinal transect: the video shall show a transect approximately 2 m wide (1 m on both sides of the transect) and pass through the center of the reef over its entire length (20 m). The diver will specify, with the help of a hand sign, any change of section (large, medium and small rocks). The use of a 20m ballast rope graduated by meter is mandatory.
  - .3 The average height of each section of stone shall be measured and the percentage occupied by each category of rock (small, medium and large).
- .2 The videos shall start at the same position, in order to facilitate the comparison of the videos made during the follow-up. The shooting sequence shall be clearly explained in the report (eg counter-clockwise inspection starting from point). In addition, the report shall include references to the video (eg, minute 0 to 4.32 perimeter video of reef A, minute 4.33 to 5 longitudinal transect of reef A) or these shall be clearly indicated in the video .
- .3 During transects (peripheral and longitudinal 20m), the diver shall also note the species observed (fauna and flora), including lobsters. The length of each lobster shall be estimated and have to be classified by size category (see Table 1). Observations shall be completed afterwards by viewing the videos.

**Table 1 - Size category of lobsters**

Size categories (cephalothorax length)	
Class	Cephalothorax length
Cryptic	≤ 15 mm
Emerging	16-25 mm

Vagile	26 à 40 mm
Juvenile	41 à 60 mm
PRE2 (at more than one moult of commercial size)	61 à 70 mm
PRE1 (at one moult of commercial size)	70 à 82 mm
COM (commercial size)	> 82 mm

- .4 At each dive, the following parameters shall be recorded:
- .1 Date;
  - .2 Start and End time of the dive;
  - .3 Water depth;
  - .4 Water Temperature;
  - .5 Visibility;
  - .6 Weather Conditions (wind speed and direction, wave height).
- .5 This is a layout of visual underwater verification of artificial reefs after construction.



### 3.13 Deliverables – Verification of reefs compliance

- .1 A draft report should be submitted to Departmental Representative
- .2 The final report must be provided to Departmental Representative 10 days after the receipt of comments on the draft. The final report in PDF format (including appendices) and all files in original format (Word, Excel for tables, jpeg for all photographs and Autocad for drawings) should be on the electronic medium.
- .3 The report shall contain the following (without limitation):
  - .1 A brief background and objectives;
  - .2 Description of work and methodology used.
  - .3 A compact disc of the video of the compliance verification of reefs
    - .1 The video must be of HD quality in high definition, be carried out under good visibility conditions. The diver must carry video as still as possible and ensuring that focus is adequate throughout the video. The video will

- be analysed by an independent consultant so it is essential that it be of high quality.
- .2 Photographs could also be taken along transects.
  - .4 Mapping and location of each reef
    - .1 For each reef, submit the following information:
      - .1 Position corners
      - .2 Dimensions of stone size sections
      - .3 Reef Height
      - .4 Reef Depth
    - .5 Weather conditions, speed and wind direction, sea conditions, waves, underwater visibility
    - .6 Visual description by underwater video
    - .7 Qualitative description of the integrity and stability of the different sections of stones of reefs
    - .8 Brief description of the fauna and flora established on the reefs, seen in the video overview (locate observations on a general layout, identified to the species)
  - .4 Materials and equipment
    - .1 Contractor shall provide all materials and equipment for the implementation of audit work, and ensure the proper use of equipment.
  - .5 Sitemap
    - .1 Sitemap in electronic format (AutoCAD) and the final position of the reefs will be provided to the Contractor after the notice of acceptance of offer.

**END OF SECTION**