



Pêches et Océans
Canada

Fisheries and Oceans
Canada

Wharf of Paspébiac

Cathodic Protection Works
Project: n° 721223-001

Specifications for Call of Tenders

By



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April 2016

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 14 00 – Work restrictions
- .2 Section 01 32 18 – Construction progress schedules – bar (GANTT) chart
- .3 Section 01 35 43 – Environmental procedures
- .4 Section 26 42 30 – Cathodic Protection

1.2 C.S.S.T. REQUIREMENTS

- .1 The Contractor shall supply documentary proof that he and his subcontractors are complying with the requirements of Québec Act respecting Occupational Health and Safety.
- .2 Pursuant to the provisions of the Québec Act respecting Occupational Health and Safety (R.S.Q., c. S-2.1) and solely for the purposes of the said Act, the Contractor shall assume from the beginning of the work, the role and obligations of principal contractor as defined in the said Act in addition to the obligations incumbent on him as an employer under the provisions of the said Act and also meet his obligations in respect to health and safety as stipulated in these contract documents.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

- .1 Work of this Contract comprises the installation of the Cathodic Protection System on the Wharf. The location of the working zone is indicated on plans in annex.

1.4 WORK LISTING

- .1 This present list of works is not necessarily complete and does not disengage the Contractor of his responsibility to complete any other work, modification or changes necessary, in order to complete with satisfaction the work stipulated in this project.
- .2 Works covers mainly, but is not limited to successful completion of the following works:
 - .1 Installation of temporary facilities required for this project
 - .2 Preparations and installation of Cathodic Protection System equipment.
 - .3 Welding
 - .4 Under water works
 - .5 General cleaning after work.

1.5 SCOPE OF WORK

- .1 The work included in this project comprises the furnishing of all labour, materials, tools, equipment, protection and transportation necessary to build and finish the work as stipulated in all the sections included in the specification, so as to standardize an effect on the property as a whole.

1.6 BEGINNING AND COMPLETION OF WORKS

- .1 The Contractor shall commence the work immediately after the reception of the acceptance of tender. Works shall be terminated two months after reception of acceptance of Offer notice. Works must be coordinated with Harbour activities.

1.7 WORK SCHEDULING

- .1 The contractor shall submit its construction progress schedule within ten working days after reception of acceptance of Offer notice.

1.8 CONTRACTOR USE OF PREMISES

- .1 The use of the premises, the contractor is restricted to areas needed for the execution of work, storage and access to the site and that to allow use of premises by users.
- .2 The Contractor shall make available necessary not to hinder port operations. In case of need of a temporary disruption of access to the wharf, the Contractor shall obtain the approval of the relevant authorities and users and provide Departmental Representative a written authorization to resume work.
- .3 The contractor shall take necessary measures to provide its employees the sanitary facilities and the rest areas required.
- .4 The Contractor shall provide its own electric power source or obtain an arrangement with wharf owner to use the existing facilities.

1.9 USERS OCCUPANCY

- .1 Users of existing facilities will continue their normal activities throughout the construction period. They will use some areas affected by construction. Work must be coordinated with Harbor authority.

1.10 MEASURING PROCEDURE

- .1 Provision for labour, materials, tools, equipment, protection, transportation, administrative overhead, profit margin and necessary financing, etc., to complete the work stipulated in this project.
- .2 Price tendered is subject to a lump sum arrangement.
- .3 Supply to Departmental Representative a detailed breakdown for the tendered global price within two (2) weeks of reception of acceptance of Offer notice. This detailed breakdown will cover the following items;

.1 Site organization

- .1 Temporary site lighting.

- .2 Temporary fences and ramps.
- .3 Leasing of land and rights-of-way if required.
- .4 All materials, plant and labour required to install temporary work, whether or not shown on plans.
- .5 Removal of all temporary work or materials.
- .6 Materials, plant and labour required for the construction, repair, maintenance and snow removal on private roads and the repair and maintenance of public roads used by Contractor within the present Contract.
- .7 Removal of all obstacles of any nature which in the opinion of the Departmental Representative may hinder work.
- .8 The payment for all construction permits and certificates, insurance, contributions required by the “Commission de la santé et de la sécurité du travail”.
- .9 Includes all elements of the division 01 of the specifications and other items not detailed elsewhere.
- .10 Also includes all works required and the means taken to ensure continuity of services.
- .11 Also includes all work identified in the plans and specifications and for which payment is not required under any other measuring item.

.2 Materials and Equipment for Cathodic Protection

- .1 Supplies of Materials for Cathodic Protection System
- .2 Supplies of others Materials and Equipment

.3 Installation of Equipment for Cathodic Protection

- .1 Installation of Equipment for Cathodic Protection System
- .2 Installation of others Materials and Equipment

1.11 EXISTING SERVICES

- .1 Notify Departmental Representative and utility companies of intended interruption of services and obtain required permission.
- .2 Provide alternative routes for personnel, pedestrian and vehicular traffic.
- .3 Provide temporary utilities as directed by the Departmental Representative to ensure that critical systems are maintained places.
- .4 Construct barriers in accordance with Section 015600 – Temporary Barriers and Enclosures

1.12 DOCUMENTS REQUIRED

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

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 32 18 – Construction progress schedule – Bar (Gantt) Chart
- .2 Section 01 35 43 – Environmental protection
- .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 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises.
- .2 Maintain existing services to building and provide for personnel and vehicle access.
- .3 Where security is reduced by work provide temporary means to maintain security of materiel and employees on the site.
- .4 The parking area for the Contractor and his employees will be allow only in the working areas.

1.4 EXISTING SERVICES

- .1 Notify, Departmental Representative and utility companies of intended interruption of services and obtain required permission.
- .2 Provide a safe and free access on the wharf for personnel pedestrian and vehicular traffic.
- .3 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

1.5 SPECIAL REQUIREMENTS

- .1 Comply with environmental restrictions (noise, heavy traffic) specified in section 01 35 43 (Environmental Protection).
- .2 Submit schedule in accordance with Section 01 32 18 - Construction Progress Schedule – Bar (Gantt) Chart.
- .3 Ensure that Contractor personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.

- .4 Stay inside the working area limits and keep free the traffic zone.
- .5 Working hours should be Monday to Friday from 7.00a.m. to 7.00p.m. Any other work schedule should get approval of the 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 RELATED SECTIONS

The specific requirements applicable to inspection and testing carried out by a laboratory assigned by the Departmental Representative are described in different sections of the specifications.

1.2 APPOINTMENT

- .1 The Departmental Representative will appoint and pay for services of testing laboratory except follows:
 - .1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.
 - .2 Inspection and testing performed exclusively for Contractor's convenience.
 - .3 Testing, adjustment and balancing of conveying systems, mechanical and electrical equipment and systems.
 - .4 Mill tests and certificates of compliance.
 - .5 Tests specified to be carried out by the Contractor under the supervision of the 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 the 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 for laboratory's use to store equipment and process 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 concealed before required inspection or testing is completed and approved by the 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 DEFINITIONS

- .1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. 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 five 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 contractor 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.

1.3 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to Departmental Representative, at most five working days after reception of acceptance of Offer notice, a 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.

1.4 MASTER PLAN

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

1.5 PROJECT SCHEDULE

- .1 Develop detailed Project Schedule derived from Master Plan.
- .2 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:
 - .1 Award.
 - .2 Shop Drawings, Samples.
 - .3 Permits.
 - .4 Mobilization.
 - .5 Painting works.
 - .6 Start up.
 - .7 Demobilization.

1.6 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 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 and member of O.I.Q.

- .3 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.
- .4 Allow 5 days for Departmental Representative's review of each submission.
- .5 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.
- .6 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.
- .7 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.

- .8 After Departmental Representative's review, distribute copies.
- .9 Submit 3 copies of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.
- .10 Submit 3 copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.
- .11 Submit 3 copies of test reports for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 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.
 - .2 Testing must have been within 3 years of date of contract award for project.
- .12 Submit 3 copies of 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 Supplement standard information to provide details applicable to project.
- .14 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.
- .15 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 sub-trades.

1.4 SAMPLES

- .1 Submit for review samples in triplicate 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 to 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 CERTIFICATES AND TRANSCRIPTS

- .1 Submit relevant documents and notes in accordance with relevant sections.
- .2 Contractor shall:
 - .1 Submit manufacturer's certificates to Departmental Representative, when specified, in sufficient copies.
 - .2 Indicate that the material respects or exceeds requirements. Submit products reference technical data sheets, the "affidavits" and the appropriate documents certifying the product conformity.

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 SECTION INCLUDES

- .1 Contractor shall manage his operations so that safety and security of the public and of site workers always take precedence over cost and scheduling considerations.

1.2 REFERENCES

- .1 Canada Labour Code - Part II, Canadian Occupational Safety and Health Regulations.
- .2 Canadian Standards Association (CSA)
- .3 Workplace Hazardous Materials Information System (WHMIS)
 - .1 Hazardous sheet (FS)
- .4 Construction Safety Code, S-2.1, (last edition).
- .5 "Loi sur la santé et la sécurité du travail", L.R.Q. Chapitre S-2.1 (last edition)

1.3 SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to Departmental Representative, the CSST and the Association sectorielle paritaire en santé et en sécurité 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 1.13
- .4 Submit the 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 (3) days before they are to be used.
- .7 Submit to Departmental Representative copies of all training certificates required for application or the safety program, in particular :
 - .1 General construction site safety and health courses;
 - .2 Safety officer attestations;
 - .3 First aid in the workplace and cardio-pulmonary resuscitation;
 - .4 Work likely to release asbestos dust;
 - .5 Work in confined spaces;
 - .6 Lockout procedures;
 - .7 Wearing and fitting of individual protective gear;
 - .8 Truck lift safe driving;

- .9 Working elevating platforms;
- .10 Any other requirement of Regulations or the safety program.
- .8 Medical examinations : wherever legislations, regulations, directives, specification or a safety program require medical examinations, Contractor must :
 - .1 Prior to start-up, submit to Departmental Representative certificates or 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, 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 beginning. 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 CSST, with copy to Departmental Representative.
- .11 Plans and certificates of compliance : Submit to the CSST and to the 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 CSST : The certificate of compliance is a document delivered by the CSST 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.

1.4 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 fallings.
- .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 inspections by a specialist of his own choosing.

1.5 SAFETY MEETINGS

- .1 Contractor decisional representative must attend meetings at which site safety and health issues are to be discussed.
- .2 The Contractor must set up a site safety committee, and convene meetings in accordance with the Construction Safety Code.

1.6 LEGAL AND REGULATORY REQUIREMENTS

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

1.7 SITE-SPECIFIC CONDITIONS

- .1 At the site, take account of the following specific conditions :
 - .1 Works involving drowning risks.
- .2 The following requirements shall be met for work involving drowning risks :
 - .1 Comply with section 2.10.13 of the **Safety Code for the construction industry**.
 - .2 Wear a life jacket or buoyancy device that meets the standards set out in the Canadian General Standards Board Standard :
 - .1 CAN/CGSB-65.7-2007, *Life Jackets, Inherently Buoyant Type*, dated 2007,
 - .2 or, unusually be accepted by Transport Canada,
 - .3 or be protected by a safety net or a fall protection system.
- .3 Obtain and forward to the Departmental Representative a letter of compliance issued by Transport Canada for the approval of any vessel (transportation, rescue, inspection, etc.) before work begins. (Reference : Mr Robert Fecteau, Transport Canada, (418) 722-3040).
- .4 Ensure that a rescue vessel moored and in the water is available for each workstation. However, where the vessel is accessible by land, it may serve more than one workstation provided the distance between any workstation and the vessel is less than 100m.
- .5 Ensure that the vessel is equipped with a motor powerful enough to overcome the current.
- .6 Ensure that the vessel has the necessary features to accommodate persons likely to be part of a rescue operation.
- .7 Ensure that the rescue vessel is available for workers at all times in case of an emergency.
- .8 Ensure that a qualified person is available to use the emergency equipment. That person must have a pleasure craft operator card for the length of vessel being used.
- .9 Establish written emergency procedures containing the following information and ensure that all workers subject to those procedures have the training and information needed to apply them :
 - .1 A full description of the procedures, including the responsibilities of the people who have access to the work site.
 - .2 The location of the emergency equipment.
- .10 Where the work site is a pier, a basin, a jetty, a wharf or any similar structure, a ladder with at least two (2) rungs below the surface of the water shall be installed on the front of the structure every 60 meters. This measure shall apply even if the project is a construction project, in which case a temporary (or portable) ladder may be used and removed when the work is complete if the owner does not own the basic facilities.

However, the owner must be notified in writing that the site does not comply with the Canada Labour Code, part II.

1.8 SAFETY AND HEALTH MANAGEMENT

- .1 Acknowledge and assume all the tasks and obligations which customarily devolve upon a principal Contractor under the terms of the Occupational Health and Safety Act (R.S.Q., chapter S-2.1) and the Construction Safety Code (S-2.1, r.6).
- .2 Develop a site-specific safety program based on the hazards identified and apply it from the start 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 1.3.
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 for applying 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.
- .3 The Contractor must draw up a 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 1.3.
The emergency plan must includes :
 - .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 light of the site characteristics.

1.9 RESPONSIBILITIES

- .1 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. Take all necessary measures to ensure the health and safety of persons and property at or in the immediate vicinity of the site and likely to be affected by any of the work.
- .2 Take all necessary measures to ensure application of and compliance with the safety and health equipments 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.

- .3 Take all necessary measures to keep the site clean and in good order throughout the course of the work.

1.10 POSTING OF DOCUMENTS

- .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 CSST.

1.11 UNFORSEEN HAZARDS

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.

1.12 HEALTH/SAFETY/HYGIENE/ENVIRONMENTAL SPECIALISTS

- .1 As of enter time, hire a qualified person whose duties will be to ensure compliance with and application of all legislation, regulations and standards and all contractual requirements pertaining to safety.
- .2 Provide this person with the authority, resources and tools needed for performance of his/her duties.
- .3 The person selected shall:
 - .1 have in-depth knowledge of legislation and regulations applicable to the site pertaining to safety.
 - .2 develop and disseminate a safety orientation program for all site workers.
 - .3 ensure that no worker is admitted to the site without having taken the safety orientation program and met all the training requirements of the applicable legislation and the site-specific safety program.

- .4 inspect the work and ensure compliance with all regulatory requirements and those of the contract documents or the site-specific safety program.
- .5 keep a daily log of actions taken and submitting a copy to Departmental Representative each week.

1.13 INSPECTION OF SITE AND CORRECTION OF HAZARDOUS SITUATIONS

- .1 Inspect the work site and complete the site inspection sheet at least one time per 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.

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 must act so that the safety and health of the public and site workers and environmental protection take precedence over cost and scheduling considerations.
- .4 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 of health of site personnel or the public or the environment.

1.14 BLASTING

- .1 Blasting and other use of explosives are forbidden.

1.15 POWDER HAMMERS AND OTHER EXPLOSIVE-ACTUATED DEVICES

- .1 Use powder actuated devices only after receipt of written permission from Departmental Representative.
- .2 Any person using a power hammer shall hold a training certificate and meet all requirements of Section 7 of the Construction Safety Code (S-2.1, r.6).
- .3 Any other explosive-actuated device shall be used in accordance with the manufacturer's directions and applicable standards and regulations.

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 FIRES

- .1 Fires and burning of rubbish on site are not permitted.
- .2 Take all the necessary measures to insure an appropriate inspection and protection for fire prevention, according to the instructions supplied.

1.2 DRAINAGE

- .1 It is forbidden to pump water containing materials particles in suspension, in the waterways, in the sewer systems, or in the drainage systems.
- .2 Control the evacuation of the water containing materials particles in suspension or any other deleterious substance according to the local authority's requirements.

1.3 WORK ADJACENT TO WATERWAYS

- .1 It is forbidden to use construction materials in the waterways.
- .2 Do not dump waste material or debris in waterways.

1.4 POLLUTION CONTROL

- .1 Properly maintain the temporary installations to prevent erosion and pollution provided in compliance with the present project.
- .2 Insure the control of any gases emitted by the materials and the installations, in accordance with the local authority's requirements.
- .3 Build temporary shelters in order to avoid any sandblasting waste and other foreign materials to contaminate the ambient air beyond the application zone.
- .4 Cover and wet down dry materials and rubbish to prevent blowing dust or debris. Remove the dust on the temporary roads.
- .5 Built temporary shelters to avoid any sandblasting waste or other foreign waste to protect water from contamination. Install dust vacuum cleaner in working area.
- .6 Built temporary shelters to avoid painting contamination in water when painting.
- .7 Plan installation of absorbing material in case of paint, oil or other contaminants in water or working area.
- .8 Prepare a prevention plan in case of spillage. Cleaning equipment's must be ready to use in working area at any time.

Part 2 Products

NOT USED

Part 3 Execution

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 special tests, inspections or approvals by Departmental Representative instructions, or 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 correction.

1.3 INDEPENDENT INSPECTION AGENCIES

- .1 Independent Inspection/Testing Agencies will be engaged by Departmental Representative for purpose of inspecting and/or testing portions of Work.
- .2 Provide material, equipment and staff required for executing inspection and testing by appointed agencies.
- .3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .4 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, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Departmental Representative.

1.7 REPORTS

- .1 Submit 4 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 in locations acceptable to 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 Mock-ups may remain as part of Work.
- .7 Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.

1.9 MILL TESTS

- .1 Submit mill test certificates.

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 52 00 – Construction facilities.
- .2 Section 01 56 00 – Temporary barriers and enclosures.

1.2 INSTALLATION AND REMOVAL

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

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

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 – Construction waste management and disposal.

1.2 SITE STORAGE/LOADING

- .1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
- .2 Do not load or permit to load any part of Work with weight or force that will endanger Work.

1.3 CONSTRUCTION PARKING

- .1 No parking will be allowed in the working site; it might be possible that some parking spaces, inside the working area, would be allowed for the Contractor, if it do not interfere with the working-site activities.
- .2 Provide and maintain adequate access to project site.
- .3 Clean runways and taxi areas where used by Contractor's equipment.

1.4 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.

1.5 CLEAN-UP

- .1 Remove construction debris, waste materials, packaging material from work site daily.

1.6 OFFICE FACILITY FOR THE DEPARTMENTAL REPRESENTATIVE

- .1 The Contractor shall supply to the departmental Representative a separated office in his office on the site or separately from his office. A phone line, a high speed internet access, a working table with a chair shall be supply as well.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 51 00 – Temporary utilities.
- .2 Section 01 52 00 – Construction facilities.

1.2 INSTALLATION AND REMOVAL

- .1 Provide, install or build temporary access and protection facilities in order to execute Work expeditiously.
- .2 Remove from site all such work after use.

1.3 GUARD RAILS AND BARRICADES

- .1 Provide and install secure, rigid guard rails and barricades in the areas where the pedestrians are not protected by guard rails.
- .2 Provide as required by governing authorities.

1.4 PROTECTION OF BUILDING 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.

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 REFERENCES

- .1 Conform to reference standards, in whole or in part, as specifically requested in specifications.
- .2 If there is question as to whether products or systems are in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.
- .3 If products or systems comply with contract documents, the costs involved for these tests will be paid for by Departmental Representative; otherwise, they will be paid for by the Contractor.
- .4 If no standard date or specific edition is mentioned, comply with the most recent edition in force at the time of the bid presentation.

1.3 QUALITY

- .1 Products, materials, equipment and articles (called products in the specifications) incorporated in Work shall be new, in good operating condition, and of best quality (in accordance with the specifications) for intended purpose. If requested, furnish evidence as to type, source and quality of products provided.
- .2 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at contractor expense and be responsible for delays and expenses caused by rejection.
- .3 Should disputes arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.
- .4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .5 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.4 AVAILABILITY

- .1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Departmental Representative of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.

- .2 In event of failure to notify Departmental Representative at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Departmental Representative reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.5 STORAGE, HANDLING AND PROTECTION

- .1 Handle and store products in manner to prevent damage, alteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.
- .5 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.6 TRANSPORTATION

- .1 Pay costs of transportation of products required in performance of Work.

1.7 QUALITY OF WORK

- .1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Departmental Representative if required Work is such as to make it impractical to produce required results.
- .2 Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.

1.8 CO-ORDINATION

- .1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.
- .2 The contractor is responsible for coordination and placement of openings, sleeves and accessories.

1.9 CONCEALMENT

- .1 Before installation inform Departmental Representative if there is interference. Install as directed by Departmental Representative.

1.10 REMEDIAL WORK

- .1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as required or according to Departmental Representative's instructions.
- .2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.11 FASTENINGS

- .1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.
- .2 Prevent electrolytic action between dissimilar metals and materials.
- .3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.
- .4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage.

1.12 FASTENINGS - EQUIPMENT

- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .2 Use heavy hexagon heads, semi-finished unless otherwise specified.
- .3 Bolts may not project more than one diameter beyond nuts.

1.13 PROTECTION OF WORK IN PROGRESS

- .1 Prevent overloading of parts of building. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated without written approval of 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 RELATED SECTIONS

- .1 Section 01 74 21 – Construction waste management and disposal.
- .2 Section 01 77 00 – Closeout procedures

1.2 PROJECT CLEANLINESS

- .1 Maintain Work 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. Do not burn waste materials on site.
- .3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .4 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 and leave Work clean and suitable for occupancy.
- .3 Prior to final review remove surplus products, tools, construction machinery and equipment.

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 35 43 – Environmental procedures.
- .3 Section 01 74 11 – Cleaning.

1.2 DEFINITIONS

- .1 Recycling: process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- .2 Reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes:
 - .1 Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.
 - .2 Returning reusable items including pallets or unused products to vendors.
- .3 Salvage: removal of structural and non-structural materials from deconstruction /disassembly of industrial, commercial or institutional structures for purpose of reuse or recycling.
- .4 Source Separation: acts of keeping different types of waste materials separate beginning from first time they became waste.

1.3 STORAGE, HANDLING AND PROTECTION

- .1 Unless specified otherwise, materials for removal become Contractor's property.
- .2 Protect, stockpile, store and catalogue salvaged items.
- .3 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.
- .4 Protect electrical and mechanical components not removed for demolition from movement or damage.

1.4 DISPOSAL OF WASTES

- .1 Do not bury rubbish or waste materials.
- .2 Do not dispose of waste volatile materials mineral spirits oil paint thinner into waterways, storm, or sanitary sewers.
- .3 Prepare project summary to verify destination and quantities on a material-by-material basis as identified in pre-demolition material audit.

1.5 SCHEDULING

- .1 Co-ordinate waste and sorting material for further use with other activities at site to ensure timely and orderly progress of Work.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 – Submittal procedures.

1.2 ADMINISTRATIVE REQUIREMENTS

- .1 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 Departmental Representative inspection.
- .2 Departmental Representative Inspection: the Departmental Representative and Contractor to inspect the Work and identify defects and deficiencies. Contractor to correct Work as directed.
- .3 Completion Tasks: submit written certificates in French that tasks have been performed as follows:
 - .1 Work: completed and inspected for compliance with Contract Documents.
 - .2 Defects: corrected and deficiencies completed.
 - .3 Certificates required: submitted.
 - .4 Work: complete and ready for final inspection.
- .4 Final Inspection: when completion tasks are done, request final inspection of Work. The inspection must be done by the Departmental Representative in presence of the Contractor. When Work incomplete according to Owner and 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 Commencement of Lien and Warranty Periods: date of Owner's acceptance of submitted declaration of Substantial Performance to be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of 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 RELATED SECTIONS

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

1.2 REFERENCES

- .1 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-G40.20/G40.21, General Requirements for Rolled or Welded Structural Quality Steel.
 - .2 CSA W48, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).
 - .3 CSA W59, Welded Steel Construction (Metal Arc Welding) (Imperial Version).
 - .4 Bolts: ASTM A307-89
 - .5 Submarine welds: ANSI/AWS D3.6

1.3 SUBMITTALS

- .1 Shop Drawings
 - .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.
 - .3 Provide written description of welding procedure for Engineer approval two (2) weeks before the beginning of work, when requested by said Engineer.
 - .4 Each shop drawing must be signed and sealed by an engineer, member of the Ordre des Ingénieurs du Québec.

1.4 DELIVERY, STORAGE, AND HANDLING

- .1 Packing, Shipping, Handling and Unloading:
 - .1 Deliver, store, handle and protect materials in accordance with Section 01 61 00 - Common Product Requirements.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Divert unused metal materials from landfill to metal recycling facility approved by Departmental Representative.

Part 2 Products

2.1 MATERIALS

- .1 Steel sections and plates: to CAN/CSA-G40.20/G40.21, Grade 350W.
- .2 Welding materials: to CSA W59
- .3 Welding electrodes: to CSA W48 Series and AWS D 3.6
- .4 Bolts and anchoring bolts: ASTM A307 or ASTM A325, type 1, except when otherwise specified.
- .5 Nuts and washers: according to the requested bolt, so as to get its full capacity. Nuts will be lubricated according to standard A563.

2.2 WELDS

- .1 All welds except the submarine welds, should comply with standard CAN/CSA W59.
- .2 Submarine welds should comply with standard ANSI/AWS D3.65. Welds must be of type B.
- .3 Before welding work, obtain the authorization of the wharf's keeper.

2.3 METAL FABRICATION - GENERAL

- .1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
- .2 Where possible, fit and shop assemble work, ready for erection.
- .3 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

Part 3 Execution

3.1 ERECTION

- .1 Do welding work in accordance with CSA W59 and AWS D 3.6 unless specified otherwise.
- .2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.

3.2 CONTROL AND INSPECTION

- .1 Provide written description of welding procedure for approval by the Departmental Representative four (4) weeks before the beginning of the work.

- .2 The Departmental Representative can proceed any time with non-destructive testing of the welds made on the working-site. The costs of these tests will be paid for by the Department.
- .3 Contractor will give access and facilitate the welds examination by the Departmental Representative at no extra cost for the Department.
- .4 If the welds examination reveals any defect, it should be repaired and re-inspected by the Departmental Representative. The Contractor will have to change his welding procedure so as to eliminate all failures noted. The repairs and the second inspection will be paid for by the Contractor.
- .5 Allow the Departmental Representative to proceed with inspection either at the fabrication, erection and/or assembly plant.
- .6 Report to Departmental Representative any failure in the material or any assembly problem on the working-site. In the occurrence of any repairs, they should be made at the Departmental Representative utmost satisfaction.
- .7 The submarine welders will be qualified by the Departmental Representative. The cost of the coupons and testing will be paid for by the Contractor. The welders that will not be qualified will not be authorized to proceed.

END OF SECTION

Part 1 General

1.1 CONTRACTOR'S OBLIGATIONS

- .1 The whole AC electrical part of the project is the Contractor's responsibility. Before commencing the project, the Contractor's must examine all the existing electrical installations on the site, and he must prepare complete installation plans, sealed by an electrical engineer. The plans and related documents will be submitted to the Departmental Representative for verification.
- .2 The whole DC electrical part of the project is also the Contractor's responsibility, and the same specifications as those listed in item 1.1.1 are required.
- .3 Once the installation completed and before starting up the system, the Contractor must have all the electrical installations verified by a competent and qualified engineer having authority to proceed in the province of Quebec. A written certification by this engineer will be required and will be supplied to the Departmental Representative before starting up the cathodic protection system..

Products

1.2 NOT USED

- .1 Not used.

Execution

1.3 NOT USED

- .1 Not used.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 This section includes the specific technical clauses for the execution of the cathodic protection system elements.

1.2 RELATED SECTIONS

- .1 Section 01 11 00 – Description of Work
- .2 Section 01 61 00 – Common Products Requirements
- .3 Section 05 12 23 – Steel

1.3 REFERENCES

- .1 Contractor must comply with the codes, standards and regulations, as well as with the good practice rules as recommended by the following associations, related to the Work to be executed. The federal laws and regulations prevail on the other codes and standards.
 - .1 ANSI, American National Standards Institute
 - .2 API, American Petroleum Institute
 - .3 ASME, American Society of Mechanical Engineers
 - .4 ASM, American Society for Metals
 - .5 ASTM, American Society for Testing and Materials
 - .6 AWS, American Welding Society
 - .7 AWWA, American Water Works Association
 - .8 BNQ, Bureau de Normalisation du Québec
 - .9 CEMA, Canadian Electrical Manufacturers Association
 - .10 CEQ, Quebec Electrical Code
 - .11 CGSB, Canadian Government Standard Board
 - .12 CPQ, Quebec Plumbing Code
 - .13 CSA, Canadian Standards Association
 - .14 CSST, Code de sécurité pour les travaux en construction
 - .15 MDDEP, Ministère du développement durable, de l'environnement et des parcs du Québec
 - .16 NACE, National Association of Corrosion Engineers
 - .17 NBC, National Building Code
 - .18 NFPA, National Fire Protection Association
 - .19 SSPC, Steel Structures Painting Council
 - .20 ULC, Underwriters Laboratory of Canada

- .2 The edition prevailing for the above-mentioned standards, laws and regulations is the one in force at the time of the Call for Tenders. However, the Contractor must not restrict himself to the application of the above-mentioned standards only, but he must rather comply with all the standards to which his work could be related to.

1.4 CONTRACTOR'S COMPETENCE

- .1 Contractor should have personnel being qualified for the cathodic protection system installation and in electricity. He should submit a report written by a competent professional authorized to work in the province of Quebec, certifying that the equipment and its installation comply with the regulations in force. There must be in his team engineers specialized in electricity and in cathodic protection to seal plans and to take in charge work done in their own field.

1.5 GUARANTEE

- .1 Regardless the Contract general clauses, during the guarantee period, if the cathodic protection system stops due to the total or partial failure of the system, the duration of this failure will be added to the guarantee period, so that finally, the owner gets a total of two (2) years of good operating condition for his system.
- .2 After notification to Contractor, the department's representatives will repair the cathodic protection system during the guarantee period, without affecting the guarantee conditions.

1.6 VERIFICATION OF BASIC DATA FOR THE PROJECT REALIZATION

- .1 Contractor must verify himself the basic data required for the project whole realization. He must ensure he has on hand all the information required for the installation and good operation of the system. The Departmental Representative will supply him all the data available. If they are required, all additional tests, site visits or other actions necessary to the project realization will be at the Contractor's charge.
- .2 The approximate bathymetry is indicated on the plans. Before starting the anodes fabrication process, Contractor should verify the bathymetry to have the precise measurements of the equipment location and check if any obstacles prevent any work execution on the worksite. Afterwards, the bathymetry results will be submitted for approval to department's representative, with the shop drawings showing the anodes assembly and the cables connections.

1.7 SHOP DRAWINGS

- .1 Three (3) days after the reception of acceptance of Offer notice, the Contractor must give to the Departmental Representative the list of shop works he intends to make before beginning the work in situ.
- .2 The Departmental Representative will proceed to various inspections of these shop works. The Contractor should give all the facilities to the Departmental Representative so they have access and can properly examine the components and assemblies at various stages upon the Departmental Representative request.
- .3 The inspections do not reduce in any way the Contractor's responsibility regarding the quality of his materials and workmanship.

1.8 WORK DESCRIPTION

Without being restricted, the works are as follows:

“Quai de pêcheurs”

- .1 The cathodic protection has two anodes circuits. The anodes must be installed on the sheet piles as indicated on the plans. The anodes cables must be attached on the main cable in the pulling-box.
- .2 The Contractor must install the conduits and pulling-box in the slab in order to protect the anodes positive and negative cables. The details are indicated on the plans.

Then, the Contractor must connect the main cables of the anodes circuits and the negatives cables of the structure to rectifiers, and the rectifiers cables to the electrical system.
- .3 The quality control of the Cathodic Protection system is made as follows:
 - .1 With an remote control system (RMU); the Contractor must installed in the electrical room, the RMU with 8 acquisition channels or equivalent.
 - .2 With corrosion samples and reference electrodes installed on the sheet piles.
- .4 The Contractor must install reference electrodes and corrosion samples on the sheet piles, as indicated on the plans. For the reference electrodes, the Contractor must install a negative cable attached to the electrode support, as indicated on the plans. The reference electrodes cables and their negative cable will be routed towards the pulling-box and connected to the data acquisition system. Also, the instruments cables will be installed between the rectifier and the data acquisition system for voltage and ampere measurements.

Concerning the corrosion samples, their installation will be made only upon the rectifier's connection, and the samples surfaces will be cleaned with an oxide before immersion.
- .5 The connection of the data acquisition system is the Contractor's responsibility. The electrical installation of the rectifiers and data acquisition system is also the Contractor's responsibility.

“Quai Marginal”:

- .1 The Contractor must install the sacrificial anodes between the piles of the wharf as indicated on the drawings. Before the fabrication of the anodes, supply the details for approbation.

1.9 MINIMUM REQUIREMENTS

- .1 The specifications and plans give the minimum requirements for the Work execution. The Work should be executed in accordance with the other regulations and codes in force in the province of Quebec.

Contractor must make sure his personnel is qualified for the work execution, particularly concerning the Quebec Electrical Code and cathodic protection specialty.
- .2 The electrical plans are schematic and the Contractor must make sure that the installation complies with the codes in force. Then, the works must be executed by competent personnel.

- .3 Before proceeding with the electrical connection, a document signed by an authorized engineer must be provided to the Departmental Representative, certifying that the installation complies with the codes and standards in force in the province of Quebec.

1.10 OPERATION AND MAINTENANCE DATA

- .1 At the most 15 days after the completion of work, provide six (6) copies of a maintenance manual written in French.
- .2 Include the following information in the document
 - .1 The description and the operating and maintenance instructions of the various equipment, including the complete list of the equipment and of its components.
 - .2 The names, addresses and phone numbers of the sub-traders and professionals.
 - .3 The guarantees and their duration.
 - .4 The manufacturer identification and the origin of the products used in the present project.
 - .5 The action to take in the case of an emergency.
 - .6 The procedure to take upon ships arrival and while the ships are docking at the wharf.
 - .7 The electrical components verification in order to prevent any accidents and particularly electrical shocks.

1.11 FORMATION MEETINGS

- .1 Give the wharf maintenance personnel the necessary formation regarding the operation and maintenance of the new system. Allow a minimum of 8 hours formation period on the site of the wharf.

Part 2 Products

2.1 GENERAL

- .1 All the materials used for the installation of the wharf cathodic protection system should be designed for a 20-year minimum duration.

2.2 PLATINIZED NIOBIUM ANODES

- .1 The anodes characteristics for the impressed current cathodic protection system are indicated on plans.
- .2 The anodes will be Anomet 40 type or the equivalent, of 3,17 mm (0,125 in) in diameter with a platinum film of 5 microns (200 micro-inches) thick. The effective length of the anodes is indicated on plans. Anode's rods must be installing in the assembly as show on plans.

The junction anodes – electrical conductors is made with a mechanical connection and with a silver weld. The connection is protected with a thermo retractable sleeve and with epoxy. The Contractor must submit the connection's protection mode for approval.

2.3 REFERENCE ELECTRODES

- .1 Reference electrodes are Borin Stelth type, model SRE-004-SFB, specifically designed for sea-water utilization (silver - silver chloride electrodes).
- .2 Reference electrodes are protected by a PVC conduit, as indicated on plans.

2.4 CORROSION SAMPLES

- .1 The corrosion samples will be made out of 350 W steel. The samples supports must be in electrical contact with the corrosion samples via connection bolts. The electrical continuity must be checked.
- .2 The corrosion samples surfaces must be polished and the oxide removed.
- .3 The corrosion samples will be installed only upon the rectifier start-up.

2.5 RECTIFIERS

- .1 The rectifiers must be specifically designed for cathodic protection in marine environment.
- .2 The general characteristics of the rectifiers are as follows:
 - .1 Primary power supply in tri-phased 600 VAC
 - .2 Oil cooling rectifier
 - .3 Rectifiers are constant voltage type with 25 adjustment steps
 - .4 The casing of the rectifier is made out of 316L stainless steel.
 - .5 Rectifier made stainless steel supports anchored to the slab made out of stainless steel
 - .6 Thermal protection and automatic starter
 - .7 Lightning protection
 - .8 Voltage and amperage measurements terminals
 - .9 Local ON/OFF terminal
 - .10 Circuit for a remote ON/OFF
 - .11 High limit amperage protection system
 - .12 Ampere-meter and voltmeter.
- .3 At the secondary, the rectifiers should supply 300 A at 24 VDC. Rectifiers must be protected at maximum power.

2.6 ELECTRICAL CABLES AND CONNECTIONS

- .1 All the AC cables fabrication and dimensions must comply with the Electrical Code in force for marine applications.
- .2 All the immersed DC cables must be specifically designed to permanently resist to sea-water. Contractor must supply a certification of such. The anodes immersed cables must be double insulated, Hallar type and H.M.W.P.E., and protected by a flexible conduit in the sections that are not protected by a metallic channel.
- .3 The other DC cables must be designed for sea-water utilization.

- .4 The cables splices must be designed for sea-water utilization. Contractor must provide, for approval, a sample and the technical data sheets of the materials taken for the splices execution. As a guide for the splices fabrication, the Contractor must take the following requirements into account:
 - .1 The cables connection will be double: mechanical and by a weld.
 - .2 It is the Contractor's responsibility to design and make the splices according to the preceding requirements or otherwise. the Contractor can propose other types of splices or improve the ones described above. In all cases, the Contractor must provide a shop drawing and a sample of his design at least one week before the splices fabrication.
 - .3 It is specifically indicated that the epoxy layer must be shop made in controlled temperature and moisture conditions, according to the product technical data sheet.
- .5 The electrical cables and the surface splices on the wharf will have to be protected with metallic sheaths in the zones where the public can have direct access to the cables.
- .6 The minimum dimension (No. AWG) of the cables is as follows:
 - .1 All anodes cables are Hallar and HMWPE, no 8 type.
 - .2 The anodes main cables and the structure negative cables are RU 90 type, No 4/0.
- .7 The rectifier negative cables are double as indicated on the drawing.
- .8 The reference electrodes cables and the negative cables are double insulated, Hallar type, and HMWPE, no AWG 8.

2.7 SHIP GROUND

- .1 Sixteen (16) grounding stations will be installed by Contractor for connection with the ships docking at the wharf. The location of the grounds connectors is indicated on the drawing. Twenty (20) cables, 75 A cables each, must be provided by Contractor.
- .2 Each grounding cable is made as follows:
 - .1 A electrical cut-off of 75 A.
 - .2 A flexible electrical cable of 75 A, similar to the one used for the welding machine of a minimum length of 10 m.
 - .3 Cable Alligator insulator clips on the ship structure.

2.8 OTHER ELECTRICAL COMPONENTS

- .1 The Contractor must install the electrical components on the AC power circuit, according to indications on the plans.
- .2 All the equipment must comply with the requirements of the Electrical Code in force. It is the Contractor's responsibility to make sure the equipment and installation are in accordance with the electrical codes in force.

2.9 SACRIFICIAL ANODES

- .1 The sacrificial anodes are of five (5) types, as indicated on the plans.
- .2 The anodes dimensions and fabrication details are indicated on the plans.

- .3 In all cases, the anode steel core should be made so that the anode is adequately adhered to the core. Before starting the anodes fabrication, the manufacturer must submit for approval the fabrication details of the central core. The core must be made out of carbon steel with good weldability and equivalent carbon of 0.40%. Sand blast the flat bar to remove the oxide.
- .4 Particular attention should be brought upon the anodes casting to avoid formation of internal gas pouches so that the anodes do not tend to come up to the water surface. Shrinkage filling after solidification is now allowed. A maximum tolerance of 2% in weight is acceptable. All the anodes must be inspected before delivery on the worksite. The inspection will be done at the Contractor facility in the Province of Quebec. The cost of the anodes shipping and handling are at the charges of the Contractor.
- .5 The chemical composition of the anodes should correspond to:
Zn: 2,8% to 6,5%
In: 0,01% to 0,02%
Si: 0,08% to 0,2%
Cu: 0,006% max
Fe: 0,12% max
Al: balance

The mercury activated anodes are not accepted. Before inspection, the manufacturer must provide the chemical analysis and the weight certificates. All anodes must be identified with anode number and heat number. All anodes must be conform to the NACE SP0387 specifications and/or the particular demands of this specifications.
- .6 The anodes open circuit potential must be -1.08 V and the anodes capacity of 2600 AH/Kg. Adjust the anodes chemical composition to obtain these specifications. The test must be done in accordance of NACE TM0190 standard. Provide the laboratory analysis certificates.
- .7 The surface of each anode corresponding to the sheet pile face must be covered with an epoxy paint layer. The paint should be compatible with the anode aluminum surface and resist to sea-water immersion. Before the paint application, manufacturer should submit for approval the system he intends to use. Manufacturer should prepare the surfaces according to the paint manufacturer instructions. The paint application should also be submitted for Department Representative's approval with a sample of paint can. The paint application will be done in shop, according to the moisture and temperature conditions prescribed by paint manufacturer. In all cases, the surfaces should be prepared by sandblasting in order to get a proper adherence and before painting, must be cleaned with a compatible solvent. The drying time will comply with the paint technical data. Upon transportation, the painted surfaces should be protected against scratches.

2.10 OTHER EQUIPEMENT

- .1 The other equipment will be made in accordance with the standards currently in force and protected against public access.

2.11 MATÉRIALS USED

- .1 It is not allowed to use materials other than those CSA approved. The electrical equipment selection must be approved by an electrical engineer retained by the Contractor.
- .2 All the materials should be selected so they can resist to the marine environment conditions.

2.12 RMU

- .1 The long-term performance assessment will be made with a data acquisition system and by a communication system with 8 channels or by two systems with 4 channels installed on the rectifiers frame. The data transmission must be done by satellite or by cellular phone line at the Owner's choice.
- .2 The system should perform the following operations:
 - .1 Data saving to pre-determined cycles. The data to be collected are the potential indicated by all the reference electrodes, the voltage, the power supplied by the rectifier and the rectifier cabinet temperature.
 - .2 Allow simultaneous saving in real time of the data collected by the data acquisition system.
 - .3 Save the software parameters in non volatile memory.
 - .4 Save at regular intervals the above-mentioned data.
 - .5 Read or save the data in ON/OFF mode according to data acquisition system predetermined cycles.
 - .6 Allow the remote ON/OFF interruption of each one of the rectifiers.
- .3 The data acquisition software characteristics are as follows:
 - .1 Allow reading in real time of the data collected by the data acquisition system.
 - .2 Allow ON/OFF interruption and examine the data collected previously.
 - .3 Allow to predetermine the system control data collection cycles and the components ON/OFF interruption.
 - .4 Allow to save on disk and print the data collected.

Part 3 Execution

3.1 PLATINE ANODES PREPARATION

- .1 The anodes will be shop made. Anodes should be carefully inspected by Contractor before commencing assembly. No platinum film damage will be tolerated.
- .2 Contractor must assemble anodes as indicated on plans. The anodes active length must be strictly respected.
- .3 The anodes fixation to the electrical conductor will first be made with a mechanical connector followed by a weld silver joint.

- .4 At the other end, Contractor must protect the copper core and the niobium casing with a weld so that they cannot get into contact with sea-water. This weld will be made by the anodes manufacturer.
- .5 The dead part of the anodes and the cable fixation to the anode will be sealed with epoxy. The Contractor should take all the necessary precautions to avoid that these can get into contact with sea-water.
- .6 The anode cable must be protected by a PVC flexible conduit. The end of this conduit must also be sealed with epoxy.
- .7 The PVC conduit threaded connections, caps and sleeves composing the anode assembly must also be sealed with epoxy.

3.2 REFERENCE ELECTRODES PREPARATION

- .1 The reference electrodes will be installed in PVC conduits in the same manner as the anodes.
- .2 The live part of the reference electrodes should be cleared off to allow the reading of the structure potential.
- .3 The reference electrodes should be properly calibrated before installation in the presence of Departmental Representative.

3.3 RECTIFIERS PREPARATION

- .1 Rectifiers should be inspected by Contractor upon delivery in order to check whether they comply or not with the requirements.
- .2 If changes are made by Contractor, the work must be made by qualified personnel. These modifications should be approved by the rectifiers manufacturer.
- .3 The rectifiers should be CSA approved.

3.4 INSULATED SACRIFICIAL ANODES PREPARATION

- .1 The anodes will be shop made. Anodes should be carefully inspected by Contractor before commencing assembly.
- .2 Contractor must assemble anodes as indicated on plans.
- .3 The anodes fixation to the electrical conductor will first be made with a mechanical connector followed by a weld joint.
- .4 Contractor must be sure the polypropylene sleeve will separate the anode core from the other components that will be welded afterwards on the wharf piles.

3.5 PLATINE ANODES INSTALLATION

- .1 The anodes will be installed in the concave part of the sheet piles.
- .2 The anode will be fixed on a steel plate, as indicated on the plans.
- .3 Contractor must check if bolted connections are sufficiently screwed in.
- .4 Above the anode, Contractor must install an anode protective angle-iron to avoid any damages due to ice forces.

3.6 CABLES INSTALLATION

- .1 The anodes cables will be welded to the sheet piles with steel channels indicated on the plans.

3.7 RECTIFIERS INSTALLATION

- .1 Rectifiers will be installed in the rectifier's electrical building as indicated on the drawings..
- .2 The fixations of the rectifiers supports will be made out of stainless steel anchored into the floor.
- .3 Contractor must connect the anodes main cable to the positive terminal of the rectifier.
- .4 Contractor must connect the cable coming from the structure to be protected to the negative terminals of the rectifier.
- .5 The rectifiers will be locked with stainless steel padlock.

3.8 NEGATIVE CABLES CONNECTIONS

- .1 The rectifiers negative electrical cables will be fixed where indicated on plans.
- .2 The fixation metallic angle-iron will be welded with a continuous weld. Afterwards, the angle-iron, the sheet pile and the negative cable bolted fixation will be protected with Petroleum Petro-40. The area around the fixation will be filled with a good water straining material.
- .3 Contractor must verify the electrical continuity of the sheet piles along the wharf. He must ensure the whole structure will be protected by the cathodic protection circuit. The way to ensure the electrical continuity is indicated on the plans.

3.9 INSTALLATION OF OTHER EQUIPMENT

- .1 The other components and equipment will be installed according to the rules of good practice and to the standards and codes in force.

3.10 PROTECTION OF THE PUBLIC

- .1 During the Work, Contractor must ensure that the public does not have any direct access to the hazardous areas. He must create protected working zones.
- .2 All the electrical components must be installed so that the public cannot have access to any of them.
- .3 Contractor must install the necessary posters, French and English, warning the public of the electrocution hazard.

3.11 OTHER INSTALLATIONS

- .1 The other installations should be made according to the actual standards in force.

3.12 VERIFICATION OF THE ELECTRICAL INSTALLATION

- .1 Before the beginning of the Work, Contractor must verify by his engineer that all the materials and the whole installation of the cathodic protection system comply with the Electrical Code requirements and with the good practice rules. The Work should be

approved by a competent authority recognized in the province of Quebec. His recommendations will prevail on all documents supplied to Contractor.

- .2 Once the system is installed, the electrical system inspection will be made by a competent authority in the province of Quebec. A certification will be given to Departmental Representative before the tests are made. It is specifically forbidden to connect the system before the certification is obtained and submitted to Departmental Representative. In case of rejection, the appropriate adjustments will be made by Contractor and the costs of such will be paid for by Contractor.

3.13 START-UP OF THE CATHODIC PROTECTION SYTEMS

- .1 Once all the components of the impressed current cathodic protection system are installed, the Contractor must proceed with the system start-up.
- .2 The Contractor must give technical assistance to the Departmental Representative for the start-up testing and allow the required time accordingly, to the utmost satisfaction of the Departmental Representative.

END OF SECTION