

Cloridorme

Projet : F3731 230093

Pile protection

SPECIFICATION

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LIST OF DRAWING AND DETAILS :

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	00/05	Presentation page
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Part 1 General

1.1 WORK COVERED BY CONTRACTUAL DOCUMENTS

- .1 The work included in this contract consists primarily, but is not limited to, pile protection of fishermen's wharf. Note that DFO will provide with some of the fabricated metal required for the contract. .

1.2 WORK DESCRIPTION

- .1 This list of works is not necessarily complete and does not relieve the Contractor of its responsibility to perform any other work, change or modification necessary to complete the project.
- .2 The work includes, but is not limited to, installation of pile protection.
- .3 The work is summarized in the following steps and as specified in the plans and specifications:
 - .1 Before proceeding to works, contractor must have supplied material delivered and proceed to a survey to confirm dimension onsite.
 - .2 Located and protect cathodic protection for piles as required. Anodes are on front piles and should not interfere with works.
 - .3 Remove rust and residue from piles in area to be consolidated. Area to weld must be cleaned to bare metal. Provide with a method to recover debris at kick off meeting
 - .4 Consolidate piles with steel profiles, mechanical bolts and studs welded thereto.
 - .5 Install permanent steel formwork and provide adjustment details in place. Supply and install a valve in the lower part of the formwork for the placement of the concrete.
 - .6 The filling of concrete inside the formwork surrounding the piles will be pumped.

1.3 CONTRACTOR USE OF PREMISES

- .1 Limit use of premises for Work, for storage and for access, to allow:
 - .1 The Departmental Representative occupancy.
 - .2 Public usage.
 - .2 In all matters relating to these operations, the Contractor is responsible for coordinating the use of the premises as directed by the Departmental Representative.
- .3 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.
- .4 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.

- .5 At completion of operations condition of existing work: equal to or better than that which existed before new work started.

1.4 PRESENCE BY THE DEPARTMENTAL REPRESENTATIVE

- .1 Users of existing facilities will continue their normal activities throughout the construction period. They will use some areas affected by the work.
- .2 The Contractor shall take into account the user's schedule of operations in order to minimize interference and facilitate operations
- .3 Co-operate with the Departmental Representative in scheduling operations to minimize conflict and to facilitate the Departmental Representative usage.

1.5 REQUIRED DOCUMENTS

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

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

1.2 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises. In this regard, make arrangements with the Departmental Representative, CTMA, the director of the port to facilitate the execution of the prescribed work.
- .2 Maintain safe access to harbor facilities for employees, pedestrians and road and marine traffic.
- .3 The Contractor is responsible for obtaining all necessary information regarding vessel movement and dockside activities in the area affected by the work. Plan and carry out the work so as not to hamper commercial activities and access to port facilities by land or sea.
- .4 The Contractor shall be responsible for the loss of time, equipment, equipment or any other costs incurred by ships at or at the berth, and other impacts arising out of the Work.
- .5 In the event that the Contractor intends to use floating material to carry out its work, the Contractor shall continuously and accurately report all movements of its floating equipment to the Communications and Traffic Maritime services of Québec (MCTS Québec). It shall also report to TMCS the times of commencement and completion of all periods of work.
- .6 In the event that the Contractor's equipment causes an obstruction to navigation, the Contractor shall:
 - .1 Notify the CCG Marine Communications and Traffic Services (MCTS) Service in Quebec City, the Shipkeeper and the Departmental Representative;
 - .2 Comply with section 3.1.1 of this section;
 - .3 Immediately remove equipment at own expense.
- .7 If the Contractor fails to fulfill this obligation, the Departmental Representative shall remove the obstruction and all costs incurred shall be debited to the Contractor.
- .8 When safety has been reduced due to work, provide other temporary means to ensure the safety of property and persons on site

1.3 EXISTING SERVICES

- .1 Notify, Departmental Representative and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, give Departmental Representative 48 hours of notice for necessary interruption of mechanical or electrical service throughout course of work. Keep duration of interruptions minimum. Carry out interruptions after normal working hours of occupants, preferably on weekends.
- .3 Provide for personnel, pedestrian and vehicular traffic.

1.4 SECURITY

- .1 Where security has been reduced by Work of Contract, provide temporary means to maintain security.

1.5 SMOKING FREE ENVIRONMENT

- .1 Comply with smoking restrictions. Smoking is not permitted.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 FLOATING MATERIAL

- .1 In the event that the Contractor intends to use floating material for the execution of its work, it shall meet the following requirements:
 - .1 Marking floating equipment with traffic lights in accordance with the most stringent of the following regulations:
 - .2 International road rules;
 - .3 Regulations for the prevention of collisions;
 - .4 Great Lakes Basin Road Rules.
- .2 Provide on-board radio listening service.
- .3 Maintain and maintain buoys and traffic lights for the duration of the contract.
- .4 The Contractor shall supply, install (wet) and maintain, at its own expense, all buoys or marks required to adequately perform the work. If, by accident or accident, one or more buoys / marks stall or drift, they shall be bailed out and / or recovered at the expense of the Contractor to the satisfaction of the Ministerial Representative. The Contractor shall be responsible for any accident of any kind due to improper arrangement or visibility of the buoys / marks during the day or to their illumination during the night or for any other reason.

Maintain all required signals and lights on floating equipment required for work in accordance with the Collision Regulations and the Safety of Navigation Regulations. All Equipment required for the work shall be properly identified and / or visible at all times.

END OF SECTION

Part 1 General

1.1 MEASUREMENT

.1 Measurement Method:

.1 Supply of materials, labor, equipment, equipment, protection, transportation, administration, profits, financing, etc. Necessary to carry out the work of this work are included in each of the positions described below, unless otherwise indicated.

.2 The Contractor shall furnish, not later than 10 days after the date of award, a breakdown of the cost of the items of lump sum unit. For mobilization and demobilization, the costs associated with each of the equipment provided must be broken down. Any item that cannot be included in a specific item on the bid form will be included in the Site Organization position.

.3 The method of measuring the classes of labor, tools or materials constituting the work shall be as follows:

.1 Item 1, Site Organization:

This item will be measured as lump sum item and includes the installation of a construction trailer with the required equipment and the mobilization of workers and equipment. This item includes all components of Division 01 of the estimate for this part of the project.

The work organization is paid on a pro rata basis.

.2 Item 2- Pile protection:

This position will be measured on a unit- basis. It includes getting fabricated metal at JPC shop and have it delivered onsite. verification of the dimensions and heights of permanent formwork, supply and installation of all the materials indicated on the drawing and the specifications. It also includes cleaning in the area to be consolidated, installation of permanent formwork, welding work and any modifications to the walls and the placement of the concrete by pumping. All expenses related to concrete pouring and curing in cold or hot temperature are also included in actual item.

2.1 Item 2.1 – Vertical pile

2.2 Item 2.2 Battered pile.

1.2 APPLICATIONS FOR PROGRESS PAYMENT

- .1 Make applications for payment on account as monthly as Work progresses.
- .2 Date applications for payment last day of agreed monthly payment period and ensure amount claimed is for value, proportionate to amount of Contract, of Work performed and Products delivered to Place of Work at that date.

1.3 FINAL PAYMENT

- .1 Submit application for final payment when Work are completed.
- .2 No later than ten (10) days after receipt of application for final payment, the Departmental Representative will review Work to verify validity of application.

Departemental representative will give notification that application is valid or give reasons why it is not valid, no later than five (5) days after reviewing Work.

- .3 Departemental representative will issue final certificate for payment when application for final payment is found valid.

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 PRECONSTRUCTION MEETING

- .1 Within 15 days of the contract being awarded and before the Contractor is mobilized on the site, the Ministerial Representative will hold a meeting with each party to the contract to discuss the administrative procedures and define the responsibilities of each.
- .2 Departmental Representative, Contractor, major Subcontractors, field inspectors will be in attendance.
- .3 Agenda to include:
 - .1 Appointment of official representative of participants in the Work.
 - .2 Schedule of Work.
 - .3 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences.
 - .4 Method of work of the Contractor. (Concrete pumping, pile cleaning, diving team, method of checking the quality of the work, etc.)
 - .5 Origin of materials (permanent forms, concrete, etc.)
 - .6 Site security.
 - .7 Monthly progress claims, administrative procedures, photographs, hold backs.
 - .8 Appointment of inspection and testing agencies or firms.
 - .9 Insurances, transcript of policies.

1.2 PROGRESS MEETINGS

- .1 The Departmental Representative shall establish a schedule of meetings which shall be held at least monthly during the course of the work. Depending on the progress of the work, the frequency of meetings could change.
- .2 The Contractor, the principal subcontractors participating in the Work, and the Departmental Representative, the Site Supervisor and any other relevant parties shall be present at such meetings.
- .3 Notify parties at least 5 days prior to meetings.
- .4 The Ministerial Representative shall prepare the minutes of these meetings and forward them to the participants and to the parties concerned, who are absent from the meetings, within 5 days of each meeting.
- .5 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 affect on construction schedule and on completion date.
- .12 Other business.

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 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.

1.2 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 drawings stamped and signed by professional engineer registered or licensed in Québec, Canada.
- .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 review of each submission by Departmental Representative's.
- .5 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.

- .6 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.
- .7 Accompany submissions with transmittal letter, in 2 copies, 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.
- .8 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 Performance characteristics.
 - .5 Standards.
 - .6 Operating weight.
 - .7 Relationship to adjacent work.
- .9 After Departmental Representative's review, distribute copies.
- .10 Submit one (1) electronic copy or two (2) prints of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.
- .11 Submit one (1) electronic copy 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.
- .12 Submit one (1) electronic copy 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.

- .13 Submit one (1) electronic copy 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.
- .14 Submit one (1) electronic copy of manufacturer's instructions for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.
- .15 Submit one (1) electronic copy of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.
- .16 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .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 The review of shop drawings by Public Works and Government Services Canada (PSPC) is for sole purpose of ascertaining conformance with general concept.
 - .1 This review shall not mean that PSPC 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 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 sub-trades.

1.3 SAMPLES

- .1 The Contractor is responsible for the quality control of its suppliers. The Contractor shall be responsible for the costs of the characterization of the materials put in place.

1.4 PHOTOGRAPHIC DOCUMENTATION

- .1 Conduct a photographic survey of the site prior to commencement of work and provide the Minister's Representative with one (1) copy of the digital photograph file in electronic format. The number of photographs and the number of points of view are at the discretion of the contractor. However, the survey must cover the whole of the work area to be carried out.

- .1 Photographic record can be replaced by a photo taken in high definition 1080i. or equivalent.

Throughout the work, the contractor shall take photographs or a video of the progress of the work. These photos should be submitted to the Ministerial Representative as work progresses.
- .2 Upon completion of the work, the Contractor shall provide the Minister's Representative with a copy of all digital photographs and videos taken during the work.

1.1 PLAN AS CONSTRUCTED

- .1 The Contractor shall prepare a plan as constructed (PAC) as an Autocad file and submit it to the Departmental Representative at the completion of the work. The PAC must contain the following information:
 - .2 Elevation and positioning of items specified in sections;
 - .3 Elevation, positioning and design of all elements of change authorizations made under the project;
 - .4 Elevation, positioning and design of all elements encountered on the site but not shown on the original construction plan (eg rock, debris, construction remains, piping, electrical wires, contaminated soil, etc.).

1.2 CERTIFICATES AND TRANSCRIPTS

- .1 Submit documents required by the relevant Occupational Health and Safety Commission immediately following award of contract.
- .2 Submit transcription of insurance immediately after award of Contract.

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

GENERAL NOTE: in this section the term “site” includes all the facilities located at the site where the work is taking place (construction site, buildings, access, infrastructure, parkings, bays, etc.).

1.1 REFERENCES

- .1 Province of Québec
 - .1 Loi sur la santé et la sécurité du travail L.R.Q., c. S-2.1 (Act respecting occupational health and safety).
 - .2 Code de sécurité pour les travaux de construction L.R.Q., c. S-2.1, r.4 (Safety code for the construction industry).

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to Departmental Representative, and the CNESST the site-specific prevention program, as outlined in the article “GENERAL REQUIREMENTS”, at least 10 days prior to the start of work.
- .3 Departmental Representative will review Contractor’s site-specific prevention program and provide comments to Contractor within 10 days after receipt of the document. Revise plan as appropriate and resubmit to Departmental Representative within 5 days after receipt of comments from Departmental Representative. Departmental Representative reserves the right not to authorize the start of work on the construction site as long as the content of the prevention program is not satisfactory. The Contractor shall then update his prevention program and resubmit it to the Departmental Representative if the scope of work changes or if the working methods of the Contractor differ from his initial plans or for any other applicable new condition.
- .4 Departmental Representative’s review of Contractor’s site-specific prevention program should not be construed as approval of the program and does not reduce the Contractor’s overall responsibility for construction Health and Safety during the work.
- .5 Submit copies of Contractor’s authorized representative’s construction site health and safety inspection reports to Departmental Representative, determine frequency, but at least once a week.
- .6 Submit to Departmental Representative within 24 hours a copy of any inspection report, correction notice or recommendation issued by Federal, Provincial and Territorial health and safety inspectors.
- .7 Submit to Departmental Representative within 24 hours an investigation report for any accident involving injury and any incident exposing a potential hazard. The investigation report shall contain at least the following:
 - .1 Date, time and place of accident;
 - .2 Name of sub-contractor involved in the accident;
 - .3 Number of persons involved and condition of wounded;

- .4 Witness Identification;
 - .5 Detailed description of tasks performed at the time of the accident;
 - .6 Equipment being used to accomplish the tasks performed at the time of the accident;
 - .7 Corrective measures taken immediately after the accident;
 - .8 Causes of the accident;
 - .9 Preventive measures that have been put in place to prevent a similar accident.
- .8 Submit to Departmental Representative WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 – Submittals. Contractor must also keep one copy of these documents on the construction site.
 - .9 Medical Surveillance: where prescribed by legislation, regulation or prevention program, submit certification of medical surveillance for construction site personnel prior to commencement of Work, and submit additional certifications for any new construction site personnel to Departmental Representative.
 - .10 Submit to Departmental Representative an on-site Emergency Response Plan at the same time as the prevention program. The Emergency Response plan must contain the elements listed in the article “GENERAL REQUIREMENTS” of this section.
 - .11 Submit to Departmental Representative copies of all training certificates required for the application of the prevention program, in particular (if applicable) for the following:
 - .1 First aid in the workplace and cardiopulmonary resuscitation;
 - .2 Work in confined spaces (mandatory for all work in confined spaces);
 - .3 Lockout-tagout procedures (mandatory for all work requiring lockout);
 - .4 Safely operating forklift trucks (mandatory for all forklift usage);
 - .5 Any other requirement of Regulations or the safety program.
 - .12 In addition, the certifications of the *Cours de santé et sécurité générale pour les chantiers de construction* (General Health and Safety Training for Construction Sites) shall be available on demand on the construction site.
 - .13 Engineer’s plans and certificates of compliance: Contractor must submit to the Departmental Representative and to the *Commission des normes, de l’équité, de la santé et de la sécurité du travail* (CNESST) a copy signed and sealed by engineer of all plans and certificates of compliance required pursuant to the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the construction industry) or by any other legislation or regulation or by any other clause in the specifications or in the contract. The Contractor must also submit a certificate of conformity signed by an engineer once the facility for which these plans were prepared has been completed and before a person uses the facility. A copy of these documents must be available on site at all times.

1.3 FILING OF NOTICE OF CONSTRUCTION SITE OPENING

- .1 Notice of construction site opening shall be submitted to the CNESST before work begins. A copy of such notice and acknowledgment of receipt from the CNESST shall be submitted to Departmental Representative.
- .2 At the completion of all the work, a notice of construction site closing shall be submitted to the CNESST, with a copy to Departmental Representative.

- .3 The Contractor shall assume the role of being the Principal Contractor in the limits of the construction site and elsewhere where he must execute work within the framework of this project. The Contractor shall recognize the responsibility of being the Principal Contractor of the project and identify himself as such in the notice of the construction site opening he provides to the CNESST.
- .4 The Contractor shall accept to divide and identify the construction site adequately in order to define time and space at all times throughout the course of the project.

1.4 HAZARD ASSESSMENT

- .1 The contractor must perform construction site specific safety hazard assessment related to project.

1.5 MEETINGS

- .1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work.
- .2 Contractor's representative with decision power must attend any meetings at which construction site safety and health issues are to be discussed.
- .3 If it is anticipated that there will be 25 workers or more on the construction site at any given time, the Contractor shall set up a worksite committee and hold meetings as required by the *Code de sécurité pour les travaux de construction* (S-2.1, r. 4) (Safety code for the construction industry). A copy of the minutes of the meetings of the committee shall be provided to the Departmental Representative no later than 5 days after the committee meeting.

1.6 REGULATORY REQUIREMENTS

- .1 Comply with all legislation, regulations and standards applicable to the construction site and its related activities.
- .2 Comply with specified standards and regulations to ensure safe operations on a site containing hazardous or toxic materials.
- .3 Always use the most recent version of the standards specified in the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the construction industry), notwithstanding the date indicated in that *Code*.

1.7 COMPLIANCE REQUIREMENTS

- .1 Comply with the *Loi sur la santé et la sécurité du travail* (L.R.Q., c. S-2.1) (Act Respecting Occupational Health and Safety) and the *Code de sécurité pour les travaux de construction* (S-2.1, r. 4.) (Safety code for the construction industry) in addition to respecting all the requirements of this specification manual.

1.8 RESPONSIBILITIES

- .1 The Contractor must acknowledge and assume all the tasks and obligations which customarily devolve upon a principal Contractor under the terms of the *Loi sur la santé et la sécurité du travail* (L.R.Q., ch. S-2.1) (Act Respecting Occupational Health and Safety) and the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the construction industry).

- .2 The Contractor must be responsible for health and safety of persons on construction site, safety of property on construction site and for the protection of persons adjacent to construction site and the environment to the extent that they may be affected by conduct of the work.
- .3 No matter the size or location of the construction site, the Contractor must clearly define the limits of the construction site by physical means and respect all specific regulation requirements applicable in this regard. The means chosen to define the limits of the construction site must be submitted to the Departmental Representative.
- .4 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific prevention Plan.

1.9 WORK PERFORMED BY EXTERNAL CONTRACTORS

- .1 The Contractor must take the necessary steps to protect the health and safety of external contractors that have no contractual link with the Contractor but have been mandated by the Departmental Representative to perform certain work. In return, these external contractors are obligated to submit to the authority of the Contractor (Principal Contractor). A subordination agreement must be signed by the Contractor and by each external contractor to this effect and submitted to the Departmental Representative prior to the start of the work of each contractor (see the wording in the article HEALTH AND SAFETY SUBORDINATION AGREEMENT).

1.10 GENERAL REQUIREMENTS

- .1 Before undertaking the work, prepare a site-specific prevention program based on the hazards identified according to the article "HAZARD ASSESSMENT" and the article "RISKS INHERENT TO THE WORKSITE" in this section. Apply this program in its totality from the start of the project until demobilization of all personnel from the construction site.
- .2 The prevention program shall take into consideration the specific characteristics of the project and cover all the work to be executed on the construction site.
- .3 The safety program must include at least the following:
 - .1 Company safety and health policy;
 - .2 Description of the stages of the work;
 - .3 Total costs, schedule and projected workforce curves;
 - .4 Flow chart of safety and health responsibilities;
 - .5 Physical and material layout of the construction site;
 - .6 Risk assessment for each stage of the work, including preventive measures and the procedures for applying them;
 - .7 Identification of the preventive measures relative to the specific risks inherent to the worksite indicated in the article "RISKS INHERENT TO THE WORKSITE";
 - .8 Identification of preventive measures for health and safety of employees and / or public works site as indicated in the article "SPECIFIC REQUIREMENTS FOR THE HEALTH AND SAFETY OF OCCUPANTS AND PUBLIC";

- .9 Training requirements;
- .10 Procedures in case of accident/injury;
- .11 Written commitment from all parties to comply with the safety program;
- .12 Construction site inspection checklist based on the preventive measures;
- .13 Emergency response plan which shall contain at least the following:
 - .1 Construction site evacuation procedures;
 - .2 Identification of resources (police, firefighters, ambulance services, etc.);
 - .3 Identification of persons in charge of the construction site;
 - .4 Identification of the first-aid attendants;
 - .5 Communication organizational chart (including the person responsible for the site and the Departmental Representative);
 - .6 Training required for those responsible for applying the plan;
 - .7 Any other information needed, in the light of the construction site's characteristics.
- .14 If available the Departmental Representative will provide the evacuation procedures to the Contractor who shall then coordinate the construction site procedure with that of the site and submit it to the Departmental Representative.
- .4 Departmental Representative may respond in writing, where deficiencies or concerns are noted in the prevention program and may request resubmission with correction of deficiencies or concerns.
- .5 In addition to the prevention program, during the course of the work the Contractor shall elaborate and submit to the Departmental Representative specific written procedures for any work having a high risk factor of accident (for example: demolition procedures, specific installation procedures, hoisting plan, procedures for entering a confined space, procedures for interrupting electric power, etc.) or at the request of the Departmental Representative.
- .6 The Contractor shall plan and organize work so as to eliminate the danger at source or ensure collective protection, thereby minimizing the use of personal protective equipment.
- .7 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.
- .8 All mechanical equipment (for example, but not limited to: hoisting devices for persons or materials, excavators, concrete pumps, concrete saws) shall be inspected before delivery to the construction site. Before using any mechanical equipment, the Contractor shall obtain a certificate of compliance signed by a qualified mechanic dated less than a week prior to the arrival of each piece of equipment on the construction site; the certificate shall remain on the construction site and transmitted to the Departmental Representative on demand.
- .9 Ensure all inspections (daily, periodic, annual, etc.) for the hoisting devices for persons or materials required by the current standards are carried out and be able to provide a copy of the inspection certificates to the Departmental Representative on demand.

- .10 The Departmental Representative can at all times, if he suspects a malfunction or the risk of an accident, order the immediate stop of any piece of equipment and require an inspection by a specialist of his choice.
- .11 The Departmental Representative must be consulted for the location of storing gas cylinders and tanks on the construction site.

1.11 RISKS INHERENT TO THE WORKSITE

- .1 In addition to the risks related to the tasks to be carried out, personnel responsible for the execution of the work on the construction site will be exposed to the following risks inherent to the area where the work will be executed.
- .2 At the worksite there is in particular the presence of the following:
 - .1 Body of water close by.
- .3 The Contractor shall process to a risk assessment of the site to validate this information and see if other risks are present on the site. He must include in its prevention program all risks that have been identified.

1.12 SPECIFIC REQUIREMENTS FOR THE HEALTH AND SAFETY OF OCCUPANTS AND PUBLIC

- .1 The Site will be occupied by employees and the public during the construction periods, although these persons will not have access to the areas required to carry out the Contractor's work: The Contractor shall take into account the following specific requirements for the protection of employees and / or the public
 - .1 Allow safe navigation.
 - .2 Consider user schedule of operations.
 - .3 Maintain safe access to harbor facilities for employees, pedestrians and road and marine traffic.
- .2 These requirements must be included in the Contractor's site-specific safety plan as well as any other measures provided by the Contractor to protect the health and safety of employees and / or the public on the site.

1.13 UNFORESEEN HAZARDS

- .1 Whenever a source of danger not defined in the specifications or identified in the preliminary construction site inspection arises as a result of or in the course of the work, the Contractor must immediately suspend work, notify the person responsible for health and safety on the construction site, take appropriate temporary measures to protect the workers and the public and notify Departmental Representative, both verbally and in writing. Then the Contractor must do the necessary modifications to the prevention program or apply the security measures required in order to resume work.

1.14 PERSON IN CHARGE OF HEALTH AND SAFETY

- .1 If the construction site meets the requirements of article 2.5.3 of the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the construction industry), the Contractor needs to hire a competent person authorized as a safety officer and appoint this person full time from the beginning of the work. This person's tasks shall solely be

dedicated to the management of health and safety on the construction site. This safety officer must have the following qualifications:

- .1 Have a safety officer certificate issued by the CNESST;
 - .2 Have site-related working experience specific to the activities associated with the present project;
 - .3 Have working knowledge of occupational health and safety regulations in the workplace;
 - .4 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter the construction site to perform work;
 - .5 Be responsible for implementing, enforcing in detail and monitoring site-specific Contractor's Health and prevention program;
 - .6 Be on construction site at all times during execution of work;
 - .7 Inspect the work and ensure compliance with all regulatory requirements and those indicated in the contract documents or the site-specific prevention program.
 - .8 Keep a daily log of actions taken and submitting a copy to Departmental Representative each week.
- .2 The safety officer's certificate shall be submitted to the Departmental Representative before the start of the work.
 - .3 When the hiring of a safety officer is not required or if this person is hired by the Departmental Representative, the Contractor shall designate a competent person to supervise and take responsibility for health and safety, no matter the size of the construction site or how many workers are present at the workplace. This person shall be on construction site at all times and be able to take all necessary measures to ensure the health and safety of persons and property at or in the immediate vicinity of the construction site and likely to be affected by any of the work. The Contractor shall submit the name of this person to the Departmental Representative before the start of work.

1.15 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on construction site in accordance with Acts and Regulations of the Province, and in consultation with Departmental Representative.
- .2 At a minimum, the following information and documents must be posted in a location readily accessible to all workers:
 - .1 Notice of construction site opening;
 - .2 Identification of principal Contractor;
 - .3 Company OSH policy;
 - .4 Site-specific prevention program;
 - .5 Emergency plan;
 - .6 Minutes of worksite committee meetings;
 - .7 Names of worksite committee representatives;
 - .8 Names of the first-aid attendants;
 - .9 Action reports and correction notices issued by the CNESST.

1.16 INSPECTION OF THE CONSTRUCTION SITE AND CORRECTION OF NON-COMPLIANCES

- .1 Inspect the construction site and complete the construction site inspection checklist and submit it to the Departmental Representative in accordance with the article "ACTION AND INFORMATIONAL SUBMITTALS" in this section.
- .2 Immediately take all necessary measures to correct any situations deemed non-compliant during the inspections mentioned in the previous paragraph or noticed by the authorities having jurisdiction or the Departmental Representative or his agent.
- .3 Submit to Departmental Representative written confirmation of all measures taken to correct the situation in case of non-compliance in matters pertaining to health and safety.
- .4 The Contractor shall give the safety officer or, where there is no safety officer, the person assigned to safety and health responsibilities, full authority to order cessation 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 construction site workers and environmental protection take precedence over cost and scheduling considerations.
- .5 The Departmental Representative or his agent may order cessation of work if the Contractor does not make the corrections needed to conditions deemed non-compliant in matters pertaining to health and safety. Without limiting the scope of the preceding articles, the Departmental Representative may order cessation of work if, in his view, there is any hazard or threat to the safety or health of construction site personnel or the public or to the environment.

1.17 PREVENTION OF VIOLENCE

- .1 Health and safety management of Public Works and Government Services Canada construction sites includes the implementation of measures designed to protect the psychological health of all persons who access the construction site where the work is taking place. Consequently, in addition to physical violence, verbal abuse, intimidation and harassment are not tolerated on the construction site. Any person who demonstrates such actions or behaviors will receive a warning and/or could be definitely expelled from the construction site by the Departmental Representative.

1.18 SANDBLASTING

- .1 Prior to starting any sandblasting work, the Contractor must:
 - .1 Provide a written procedure of the work that meets the requirements of section 3.20. of the *Code de sécurité pour les travaux de construction, S-2.1, r.4* (Safety code for the Construction Industry).
 - .2 Demonstrate that he has all the material and equipment required on hand to respect the procedure and for safely conducting the work.
 - .3 All sanding and sandblasting work shall be done by using an abrasive containing less than 1% of silica.

1.19 RESPIRATORY PROTECTION

- .1 Contractor must ensure that all workers who must wear a respirator as part of their duties have received training for that purpose as well as fit testing of their respirator, in accordance with CSA Standard Z94.4 *Selection, use and care of respirators*. Submit the certificates of the fit testings to the Departmental Representative on demand.

1.20 FALL PROTECTION

- .1 Plan and organize work so as to eliminate the risk of fall at the source or ensure collective protection, thereby minimizing the use of personal protective equipment. When personal fall protection is required, workers must use a safety harness that complies with CSA standard CAN/CSA Z-259.10 M90. A safety belt must not be used as fall protection.
- .2 Every person using an elevating platform (scissors, telescopic mast, articulated mast, rotative mast, etc.) must have a training regarding this equipment.
- .3 The use of a safety harness is mandatory for all elevating platforms with telescopic, articulate or rotative mast.
- .4 Define the limits of the danger zone around each elevating platform.
- .5 All openings in a floor or roof must be surrounded by a guardrail or provided with a cover fixed to the floor able to withstand the loads to which it could be exposed, regardless of the size of the opening and the height of the fall it represents.
- .6 Everyone who works within two metres from a fall hazard of three metres or more must use a safety harness in accordance with the requirements of the regulation, unless there is a guardrail or another device offering an equivalent safety.
- .7 Despite the requirements of the regulation, the Departmental Representative may require the installation of a guardrail or the use of a safety harness for specific situations presenting a risk of fall less than three metres.

1.22 LIFTING LOADS WITH CRANE OR BOOM TRUCK

- .1 Unless specified otherwise, the Contractor must prepare a hoisting plan and submit it to the Departmental Representative for all lifting operations done with a crane or a boom truck at least 5 days before these lifting operations begin. The hoisting plan must contain at a minimum the information listed at the end of this article.
- .2 The hoisting plan must be signed and sealed by an engineer for the following lifting operations:
 - .1 Lifting of concrete panels;
 - .2 Lifting mechanical/electrical equipment on a roof or on the floor of a building;
 - .3 Lifting of loads encroaching on the public road;
 - .4 Lifting large dimensions or very heavy loads;
 - .5 All other lifting operation, in accordance with the requirements of the Departmental Representative.
- .3 In addition to the above requirements, the Contractor must plan the hoisting operations in a way as to avoid that the loads pass over the occupied zones on the site. When there is no alternative, the hoisting plan must absolutely be signed and sealed by an engineer and must guarantee the security of the occupants in that zone; the plan must also be approved by the Departmental Representative. The Departmental Representative can, if he deems necessary, require that the work be done at night or on weekends.
- .4 Upon the beginning of the work on the construction site, the Contractor must submit the list of the hoisting plans anticipated for the whole project to the Departmental

Representative. That list shall be updated as needed if changes occur during the work.

- .5 In addition to the mechanical service inspection certificate, the annual inspection certificate and the crane logbook must be aboard all cranes and boom truck cabs.
- .6 The entire lifting area shall be marked off to prevent the entry of non-authorized persons. The Contractor shall carefully inspect all of the slings and lifting accessories and make sure that those in poor condition are destroyed and scrapped.
- .7 Compressed-gas cylinders shall be lifted with a basket specially designed for this purpose.
- .8 Minimum content of hoisting plan
 - .1 Sketch indicating at a minimum, the location of the crane, the surrounding facilities, the zone covered by the hoisting operations, the pedestrian's pathways and vehicular routes, the security perimeter, etc.
 - .2 Weight of loads
 - .3 Dimensions of loads
 - .4 List of hoisting devices and weight of each
 - .5 Total weight lifted
 - .6 Maximum height of obstacles to clear
 - .7 Height of loads lifting relative to the surface of the roof (in the case of loads to be placed on roofs)
 - .8 Use of guide cables
 - .9 Type of crane used
 - .10 Crane capacity
 - .11 Boom length
 - .12 Boom angle
 - .13 Crane's radius of action
 - .14 Deployment of stabilizers
 - .15 Percentage usage of the crane's capacity
 - .16 Verification confirmation of hoisting equipment
 - .17 Identification of the crane operator and the person responsible for the hoisting operations with date and signatures.

1.23 HOT WORK

- .1 Hot work means any work where a flame is used or a source of ignition may be produced, i.e., riveting, welding, cutting, grinding, burning, heating, etc.
 - .1 Before the beginning of each shift of work and for each sector, the Contractor must obtain a "Hot Work Permit" emitted by the person responsible for the site.
 - .2 A working portable fire extinguisher suitable to the fire risk shall be available and easily accessible within a 5 m radius from any flame, spark source or intense heat.
 - .3 The Contractor must appoint an individual to do continuous monitoring of the fire risks for a period of one (1) hour after the end of the shift of hot work. This individual shall sign the section for this purpose on the permit and give it to the person in charge of the construction site after the one-hour period.
 - .4 When the hot work is done in areas where there is combustible materials or where the walls, ceilings or floors are made of or covered with combustible materials, a final inspection of the work area must be scheduled four (4) hours

after the work has finished. Unless specified otherwise by the Departmental Representative, the Contractor must assign a person to carry out this monitoring.

- .2 Welding and cutting: In addition to the requirements prescribed in the preceding paragraphs, the Contractor must respect the following requirements:
- .1 Welding and cutting work must be carried out in accordance with the requirements of the *Code de Sécurité pour les travaux de construction, S-2.1, r.4* (Safety code for the construction industry) and CSA standard W117.2, Safety in Cutting, Welding and Allied Processes.
 - .2 Air extraction system with filters must be used for all welding and cutting work performed inside.
 - .3 Stop all activities producing flammable or combustible gas, vapours or dust in the vicinity of the welding or cutting work.
 - .4 Store all compressed gas cylinder on a fireproof fabric and make sure that the room is well ventilated.
 - .5 Store all oxygen cylinders more than 6 metres from a flammable gas cylinder (ex: acetylene) or a combustible such as oil or grease, unless the oxygen cylinder is separated from it by a wall made of non-combustible material as mentioned in the article 3.13.4 of the *Code de sécurité pour les travaux de construction, S-2, r. 6* (Safety code for the construction industry)
 - .6 Store the cylinders far from all heat sources.
 - .7 Not to store the cylinders close to the staircases, exits, corridors and elevators.
 - .8 Do not put acetylene in contact with metals such as silver, mercury, copper and alloys of brass having more than 65% copper to avoid the risk of an explosive reaction.
 - .9 Check that welding equipment with electric arc has the necessary tension and are grounded.
 - .10 Ensure that the conducting wires of the electric welding equipment are not damaged.
 - .11 Place the welding equipment on a flat ground away from the bad weather.
 - .12 Install fireproof canvas when the welding work is done in a superposition and where there is the risk of falling sparks.
 - .13 Move away or protect the combustible materials which are closer than 15 metres from the welding work.
 - .14 Prohibition to weld or cut any closed container.
 - .15 Do not perform any cutting, welding or work with a naked flame on a container, a tank, a pipe or other container containing a flammable or explosive substance unless:
 - .1 they have been cleaned and air samples indicating that work can be done without danger has been taken; and
 - .2 provisions to ensure the safety of the workers have been made.

1.24 WORK NEAR BODIES OF WATER

- .1 For all work done near a body of water (such as work above water, work on a wharf, work on the edge of a watercourse, etc.), the Contractor must respect the requirement of

the following paragraphs in addition to those in article 2.10.13 du *Code de sécurité pour les travaux de construction* (Safety code for the Construction Industry).

- .2 The Contractor must plan his work in a way to implement safety measures to prevent any worker from falling in the water. The use of these measures should be favoured over the wearing of a life jacket.
- .3 Submit the following documents to the Departmental Representative before the beginning of the work. Each of these documents must contain at a minimum the information required in section 11 of the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the Construction Industry). If there is the possibility that all or part of the work can be done during the winter, the safety measures included in the documents required above must be adapted accordingly.
 - .1 Description of the body of water;
 - .2 Description of the work done next to this body of water;
 - .3 Plan of transportation on water adapted to the work and to the characteristics of the body of water;
 - .4 Rescue plan adapted to the work and to the characteristics of the body of water;
- .4 Submit to the Departmental Representative the certificate of training required in article 11.2 du *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the Construction Industry) for the following individuals:
 - .1 The person assigned to prepare the documents required in the preceding paragraph; and
 - .2 Each person responsible for the transport or rescue operations
- .5 If the rescue plan stipulates the use of a vessel, the Contractor must submit to Departmental Representative the competency card or certificate for the individuals in the rescue team for his work, issued by Transport Canada.
- .6 The Contractor must include in his weekly inspection checklist the devices required in the articles 11.4 and 11.5 du *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the Construction Industry).
- .7 Ensure that a rescue vessel moored and in the water is available at each place where a worker may fall in the water. However, a vessel may serve more than one workplace on the same construction site provided the distance between any of these workplaces and the vessel is less than 30 m.
- .8 Where the construction site is a wharf, a pier, a quay 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 m.

1.25 TEMPORARY HEATING

- .1 In addition to respecting section 3.11 of the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the Construction Industry), the Contractor must also respect the requirements described in the following paragraphs.
- .2 A portable fire extinguisher must be available at all times near the heating units, no matter what type of heating is used.

- .3 The heating units must always be used in accordance with the manufacturer's specifications.
- .4 If applicable, the canvas or tarpaulins used next to the heating units must be solidly fixed so as not to be projected on the heaters, on the pipes connected to the heaters or on any other heat source.
- .5 The gas cylinders must be installed in a way that they are protected from vehicle and other equipment traffic.
- .6 For the use of heating units other than electric, the Contractor must install a carbon monoxide detector in the work area, next to the heating units and/or the workers, throughout the course of the heating period. The Contractor must immediately apply the corrective measures required to the heating units if the detector's alarm goes off.
- .7 The Contractor must ensure a minimum surveillance of the heating units outside the hours of work (nights and weekends). He must submit a surveillance plan to the Departmental Representative before the use of the heating units.

1.26 DIVING OPERATIONS (if required)

- .1 In accepting this contract, the Contractor agrees to satisfy the following requirements:
 - .1 Compliance with all the requirements of the *Règlement sur la santé et la sécurité du travail* (S-2.1, r.13) (Regulation respecting occupational health and safety), more precisely section XXVI. I, entitled *Travail effectué en plongée* (Underwater Work). Compliance, furthermore, with the latest editions of standards CAN/CSA Z275.2 – *Occupational Safety code for Diving Operations*, CAN/CSA Z275.1 – *Hyperbaric Chambers* and CAN/CSA Z275.4 – *Competency Standard for Diving Operations*. In the event of conflict between these requirements, the most stringent requirement shall apply.
 - .2 In addition to the above, in cases where construction work is involved, compliance with the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the Construction Industry).
 - .3 Before starting the work, submit to the Departmental Representative the following documents, as per the *Règlement sur la santé et la sécurité au travail* (S-2.1, r.13) (Regulation respecting occupational health and safety):
 - .1 The professional diving training certificate of each member of the dive team OR a document recognizing the skills of those persons in accordance with the *Competency Standard for Diving Operations*, CAN/CSA Z275.4-02, as per section 312.8 of the Regulation;
 - .2 The workplace first-aid training certificate of each member of the dive team;
 - .3 The medical certificate of each member of the dive team;
 - .4 For each dive included in this contract, a dive plan containing the following information, in addition to that required under the *Règlement sur la santé et la sécurité au travail* (Regulation respecting occupational health and safety):
 - a) The thermal protection to be used;
 - b) The repetitive dive factor;
 - c) The no-decompression limit;

- d) The circumstances in which the dive must be terminated;
 - e) The procedures to be followed to ensure that machinery, equipment or devices that could create a hazard have been locked out;
 - f) The decompression table to be used, as required;
- .5 Notification confirming that a system for communicating with the *Service d'assistance médicale pour les urgences en plongée* (Medical assistance service for diving emergency) is available at the diving station at all times.
- .4 The Contractor shall take into account the following specific characteristics of the worksite, and adapt its dive plan accordingly:
- .1 Continuity of port facility services.
- .5 Where the dive takes place at one of the following locations, provide the Departmental Representative confirmation that the authorities concerned have been notified:
- .1 Upstream or downstream from a hydraulic structure or submerged water line;
 - .2 In marine waterways;
 - .3 In port facilities
- .6 If the dive station is more than 2 metres above the water, provide the Departmental Representative:
- .1 A drawing of the equipment used to transport the worker through the air-water interface, if a device other than a stage is used for that purpose;
 - .2 A drawing of the device used to hoist the stage or other device, unless that device is a crane or boom truck.
- .7 If the dive is carried out from a vessel, provide the Departmental Representative the following documents:
- .1 Proof of qualification of the vessel operator;
 - .2 The vessel's certificate of compliance from Transport Canada.
- .8 a Before starting the work, carry out an underwater rescue simulation at the site, as required under section 312.31 of the *Règlement sur la santé et la sécurité du travail* (S-2.1, r.13) (Regulation respecting occupational health and safety).
- .9 On a daily basis, complete and provide to the Departmental Representative a checklist confirming the presence and condition of the equipment required at the dive site as per the dive plan.
- .10 Ensure that all other documents required under section XXVI of the *Règlement sur la santé et la sécurité du travail* (S-2.1, r.13) (Regulation respecting occupational health and safety) are available at the construction site at all times (diving logbook, diver's logbook, etc.).

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

- .1 Canada Green Building Council (CaGBC)
 - .1 LEED Canada-NC Version 1.0-2004, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Package for New Construction and Major Renovations (including Addendum 2007).
 - .2 Rating System Addenda for New Construction and Major Renovations LEED Canada-NC Version 1.0-Addendum 2007.
 - .3 LEED Canada-CI Version 1.0-2007, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Guide for Commercial Interiors.
 - .4 LEED Canada 2009 for Design and Construction-2010, LEED Canada 2009 for Design and Construction Leadership in Energy and Environmental Design Green Building Rating System Reference Guide
 - .5 LEED Canada for Existing Buildings, Operations and Maintenance-2009, LEED Canada 2009 Leadership in Energy and Environmental Design Green Building Rating System Reference Guide.
- .2 U.S. Environmental Protection Agency (EPA)/Office of Water
 - .1 EPA 832/R-92-005-92, Storm Water Management for Construction Activities, Chapter 3.
 - .2 EPA General Construction Permit (GCP) 2012.

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 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00- Submittal Procedures.
- .2 Before commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review and approval by Departmental Representative.
- .3 Include in Environmental Protection Plan:
 - .1 Names of persons responsible for ensuring adherence to Environmental Protection Plan.

- .2 Names and qualifications of persons responsible for manifesting hazardous waste to be removed from site.
- .3 Names and qualifications of persons responsible for training site personnel.
- .4 Descriptions of environmental protection personnel training program.
- .5 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use.
 - .1 Plan to include measures for marking limits of use areas and methods for protection of features to be preserved within authorized work areas.
- .6 Spill Control Plan to include procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
- .7 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.
- .8 Air pollution control plan detailing provisions to assure that dust, debris, materials, and trash, are contained on project site.
- .9 Contaminant Prevention Plan identifying potentially hazardous substances to be used on job site; intended actions to prevent introduction of such materials into air, water, or ground; and detailing provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.
- .10 Waste Water Management Plan identifying methods and procedures for management, discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines.

1.4 FIRES

- .1 Fires and burning of rubbish on site is not permitted.

1.5 POLLUTION CONTROL

- .1 Maintain temporary erosion and pollution control features installed under this Contract.
- .2 Control emissions from equipment and plant in accordance with local authorities' emission requirements.
- .3 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area.
- .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

1.6 NOTIFICATION

- .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 with the implementation of the proposed measures 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.

1.7 GENERAL MITIGATION MEASURES

- .1 The Contractor shall take into account in the execution of his work the following general mitigation measures to reduce environmental incidents and the consequences in the event of failure:
 - .1 Residual materials should be disposed of properly at an authorized site in accordance with their environmental characteristics and in accordance with applicable regulations.
 - .2 Machinery in contact with water will use biodegradable vegetable oil specially designed for this type of equipment.
 - .3 Release of demolition materials into the aquatic environment is prohibited. In case of an accident, it will be necessary to recover all the debris released.
 - .4 The Contractor shall have on site an accident response kit to be able to contain a spill.
 - .5 Have a contingency plan for an accidental spill of contaminants (eg, hydrocarbons). Ensure that the contingency plan contains, as a minimum, a response plan and alert structure, and is located in a location that is easily accessible and visible to all employees. Employees should be trained to be able to respond to spills.
 - .6 In the event of an aquatic spill, contaminated water will be confined and recovered by a specialized firm and routed to a treatment center approved by the Quebec Ministry of Sustainable Development, Environment and Climate Change (MDDELCC).
 - .7 Water that has been in contact with uncured or partially cured concrete (such as wash water from cement mixers and other equipment) shall not be discharged into the aquatic environment, surface or storm drainage system at any time.
 - .8 From the start of the work, the Contractor shall construct the temporary storage area. Maintenance and refueling should be carried out in this area. This site must be located at a minimum distance of 30 m from the shore or from a watercourse.
 - .9 Turn off machinery motors when not in use.
 - .10 Machinery must be in good working order. A preliminary inspection of the machinery must be carried out prior to mobilization on the site.
 - .11 Use tarpaulins on trucks when transporting equipment.
 - .12 Any spills of hazardous materials at the site are reported to Environment Canada's Alert Network and 1-866-283-2333 and MDDELCC at 1-866-694-5454 and the Canadian Coast Guard (1-800 -363-4735)
 - .13 Upon completion of work, work areas shall be cleared of equipment, machinery, materials, temporary facilities, waste, scrap, rubble and excavated material from the work.

Part 2 Products

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 for recycling/reuse in accordance with specifications.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

Part 1 General

1.1 INSPECTION

- .1 The Contractor shall submit a Quality Control Plan for all phases of the Project. The latter will monitor and adapt this quality management plan.
- .2 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.
- .3 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.
- .4 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.
- .5 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. If such Work is found in accordance with Contract Documents, Departmental Representative shall pay cost of examination and replacement.

1.2 INDEPENDENT INSPECTION AGENCIES

- .1 Independent Inspection/Testing Agencies will be engaged by Departmental Representative for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Departmental Representative.
- .2 Provide equipment 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.

1.3 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.

1.4 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.

1.5 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.

1.6 REPORTS

- .1 Submit two (2) copies of inspection and test reports to Departmental Representative.
- .2 Provide copies to subcontractor of work being inspected or tested, manufacturer or fabricator of material being inspected or tested.

1.7 TESTS AND MIX DESIGNS

- .1 Furnish test results and mix designs as requested.
- .2 Cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised by Departmental Representative and may be authorized as recoverable.

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 INSTALLATION AND REMOVAL

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

1.2 WATER SUPPLY

- .1 Departmental Representative will not provide continuous supply of potable water.
- .2 Arrange for connection with appropriate utility company and pay costs for installation, maintenance and removal.
- .3 Pay for utility charges at prevailing rates.

1.3 TEMPORARY POWER AND LIGHT

- .1 Provide and pay for temporary power during construction for temporary lighting and operating of power tools during work.
- .2 Make arrangements to connect the construction trailer and various equipment and pay for installation, maintenance and removal.
- .3 Any electrical connections to the existing system must be made by a qualified electrician.

1.4 TEMPORARY COMMUNICATION FACILITIES

- .1 The Contractor shall provide temporary telecommunications facilities, including telephones, facsimile machines, the Internet including lines, and necessary equipment, for his own use and for the use of the Departmental Representative, The connection of these facilities to the main networks and bear the costs of all these services.

1.5 FIRE PROTECTION

- .1 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction, governing codes, regulations and bylaws.
- .2 Burning rubbish and construction waste materials is not permitted on site.

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 Offices

- .1 Provide office heated to 22 degrees C, lighted 750 lx and ventilated, of sufficient size to accommodate site meetings and furnished with drawing laydown table.
- .2 Provide marked and fully stocked first-aid case in a readily available location.
- .3 Subcontractors to provide their own offices as necessary. Direct location of these offices. The Contractor have to inform them, where they can install there temporary facilities
- .4 Departmental Representative's Site office.
 - .1 Provide temporary office for Departmental Representative
 - .2 Inside dimensions minimum 3.6 m long x 3 m wide x 2.4 m high, with floor 0.3 m above grade, complete with 2 50% opening windows and one lockable door.
 - .3 Insulate building and provide heating system to maintain 22 degrees C inside temperature at -20 degrees C outside temperature
 - .4 Finish inside walls and ceiling with plywood, hardboard or wallboard and paint in selected colours. Finish floor with 19 mm thick plywood
 - .5 Install electrical lighting system to provide min 750 lx using surface mounted, shielded commercial fixtures with 10 % upward light component
 - .6 Provide private washroom facilities adjacent to office complete with flush or chemical type toilet, lavatory and mirror, maintain cleanness and supply of paper towels and toilet tissue
 - .7 Equip office with 1 x 2 m table, 2 chairs, , one drawer filing cabinet, one plan rack and one coat rack and shelf
 - .8 Maintain in clean condition

1.2 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.

1.3 SANITARY FACILITIES

- .1 Provide sanitary facilities for work force and Departmental Representative 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.

1.4 CLEAN-UP

- .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

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

General

Part 1 General

1.1 PROJECT CLEANLINESS

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, including that caused by Owner or other Contractors.
- .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, unless approved by Departmental Representative.
- .3 Clear snow and ice from access to building.
- .4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .5 Provide on-site containers for the removal of debris and waste materials
- .6 Provide and use marked separate bins for recycling.
- .7 Dispose of waste materials and debris off site.

1.2 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 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .6 Remove dirt and other disfiguration from exterior surfaces.
- .7 Sweep and wash clean paved areas.

1.3 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse/recycling.

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 REFERENCE STANDARDS

- .1 American Concrete Institute (ACI)
 - .1 ACI 304R-00, Guide for Measuring, Mixing, Transporting and Placing Concrete.
- .2 Canada Green Building Council (CaGBC)
 - .1 LEED Canada-NC Version 1.0-2004, LEED (Leadership in Energy and Environmental Design): Green Building Rating System for New Construction and Major Renovations (including Addendum 2007).
 - .2 LEED Canada-NC-2009, LEED (Leadership in Energy and Environmental Design): Green Building Rating System for New Construction and Major Renovations 2009.
 - .3 LEED Canada-CI Version 1.0-2007, LEED (Leadership in Energy and Environmental Design): Green Building Rating System for Commercial Interiors.
 - .4 LEED Canada-EB: O&M-2009, LEED (Leadership in Energy and Environmental Design): Green Building Rating System for Existing Buildings: Operations and Maintenance 2009.
- .3 CSA International
 - .1 CSA A23.1/A23.2-09, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.

1.2 DEFINITIONS

- .1 Pumped concrete method: method of placing concrete underwater uses concrete pump with discharge line used in similar manner to tremie pipe. At its upper part, the tube is connected to the pump and its lower part to the valve placed in the formwork. The end of the tube must be fitted with its own valve and its coupling system to that fixed on the formwork to ensure that the pipe is filled with fresh concrete at all times when moving between formwork. The two (2) valves will be operated simultaneously.

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Concrete pre-placement meeting; conduct pre-placement meeting 2 weeks minimum before concreting operation with a pump.
 - .1 Ensure meeting includes as minimum attendees as follows:
 - .1 General contractor.
 - .2 Ready-mix concrete supplier.
 - .3 Admixture supplier.
 - .4 Placing/formwork sub-contractor.
 - .5 Testing agency representative.
 - .6 Structural engineer.
 - .7 Owners representative.

- .2 Distribute minutes to attendees including copies of concrete mix designs, aggregate physical properties, placing schedule, rate of delivery, testing program, and, contingency plan for delay and breakdown.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00- Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for concrete and include product characteristics, performance criteria, physical size, finish and limitations.

Part 2 Products

- .1 Use type GUb S/SF to obtain concrete in accordance with type V-S according to .
- .2 Minimum compressive strength at 28 days: 35 MPa.
- .3 Maximum water cement ratio by mass: 0.40.
- .4 Nominal size of coarse aggregate: 5 mm.
- .5 Cement content for mixtures: 365 kg/m³minimum.
- .6 Slump at point and time of discharge: From 120±30 mm.
- .7 Corrosion inhibitor in accordance with ASTM C-494, Type C: 3% by weight of cement.
- .8 Air Content: 5% to 8%.
- .9 Admixtures: as approved in writing by Departmental Representative. Use admixtures to correct deficiencies in mix or to improve placement of concrete.
 - .1 Departmental Representative may withdraw prior approval of admixture if conditions encountered during course of work indicate unsatisfactory results.
 - .2 Do not use calcium chloride or materials containing calcium chloride.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for concrete placement installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect surfaces/supports in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 PREPARATION

- .1 Where concrete must bond to existing surfaces, clean surfaces before starting concrete placement.
 - .1 All parts of the pile to be protected must be cleaned with a pneumatic brush. Remove all accumulations of rust, algae, molluscs, crustaceans, etc ..., up to white steel.
 - .2 No more than 5 days between cleaning and pouring of concrete.

3.3 INSTALLATION

- .1 Where concrete placement extends above water surface, protect concrete from direct contact with air at temperature below 5 degrees C for 3 days.
- .2 Place concrete in one continuous operation to full depth required.
 - .1 Supply complete equipment for every phase of operation.
 - .2 Provide sufficient supply of concrete to complete pour without interruption.
- .3 Pumped concrete method:
 - .1 Type I concrete shall be pumped as shown on the plan.
 - .2 The dip tube shall be watertight and sufficiently large to allow the concrete to flow freely. The diameter of the tube shall not be less than eight (8) times the maximum size of the large aggregate.
 - .3 Provide means for raising and lowering the dip tube.
 - .4 Begin casting the concrete with the tube already full and attach to the permanent shutter valve. Adjust the flow velocity to avoid segregation of the mixtures and allow the water to escape gradually over the formwork.
 - .5 If any water leaks into the tube, remove it immediately. Fill the concrete tube and continue the concreting as required.
 - .6 Do not pour concrete into running water. Do not vibrate or disturb or handle concrete in any way after installation.

3.4 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11- Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11- Cleaning.
- .3 Waste Management: separate waste materials for recycling reuse in accordance with Section 01 35 21- LEED Requirements 01 74 21- Construction/Demolition Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 11 11 – Word related general information
- .2 Section 03 37 26 – Underwater placed concrete

1.2 REFERENCE STANDARDS

- .1 ASTM International
 - .1 ASTM A53/A53M-07, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
 - .2 ASTM A269-08, Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
 - .3 ASTM A307-07b, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
- .2 CSA International
 - .1 CSA G40.20/G40.21-04 (R2009), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 CAN/CSA G164-M92 (R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .3 CSA S16-09, Design of Steel Structures.
 - .4 CSA W48-06, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).
 - .5 CSA W59-M03(R2008), Welded Steel Construction (Metal Arc Welding) Metric.
- .3 Environmental Choice Program
 - .1 CCD-047-98(R2005), Architectural Surface Coatings.
 - .2 CCD-048-98(R2006), Surface Coatings - Recycled Water-borne.
- .4 Green Seal Environmental Standards (GS)
 - .1 GS-11-[2008, 2nd Edition], Paints and Coatings.
- .5 Health Canada / Workplace Hazardous Materials Information System (WHMIS).
 - .1 Material Safety Data Sheets (MSDS).
- .6 The Master Painters Institute (MPI)
 - .1 Architectural Painting Specification Manual - current edition.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00- Submittal Procedures. Before submitting the shop drawings, the Contractor must go to the site to take the dimensions of the permanent forms for each pile to be repaired.
- .2 Shop Drawings:

- .1 Submit drawings stamped and signed by professional engineer registered or licensed in Québec, Canada.
- .2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.
- .3 Provide a written description of welding procedures for approval by the departmental representative two (2) weeks prior to commencement of work as required by the latter.

1.4 QUALIFICATION OF STAFF

- .1 For all underwater welding work, the Contractor shall use labor-intensive personnel in this type of work. This welding work shall be carried out in accordance with ANSI / AWS D3.6 - 89. Welders shall be qualified on site by a representative of the Ministry from tests on representative samples and under conditions similar to the location of the work to be carried out.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials in dry location, off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.

Part 2 Products

2.1 MATERIALS

- .1 Steel sections and plates and dowel: to CSA G40.20/G40.21, Grade 350W in accordance with CSA G40.20/G40.21.
- .2 Welding materials: to CSA W59 and ANSI/AWS D3.3 - 89.
- .3 Welding electrodes: to CSA W48 Series.
- .4 Bolts and anchor bolts: to ASTM A307.
- .5 Mechanical bolts fixing formwork will be in 316 stainless steel.

2.2 WELDING

- .1 Welds outside water shall conform to CAN / CSA W59.
- .2 Subsea welds shall conform to ANSI / AWS D3.6. Welds must be type C Where possible, fit and shop assemble work, ready for erection.

2.3 METAL WORKS - GENERAL

- .1 Work shall be straight, square, properly aligned and in accordance with prescribed dimensions; The seals must be tightened and secured properly.
- .2 Where practicable, structures shall be adjusted and assembled in a workshop and delivered ready for installation.
- .3 Exposed welds shall be continuous throughout the length of the joint; They must be filed or ground so as to have a smooth and smooth surface.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for metal fabrications installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.
 - .4 The Contractor shall at all times provide an underwater camera and television system including a communication system to enable on-line inspection by our Departmental Representative.

3.2 PILES CLEANING

- .1 All parts of the pile to be protected must be cleaned with a pneumatic brush. Remove all accumulations of rust, seaweed, molluscs, crustaceans, etc., up to white steel.
- .2 There shall be no more than five (5) days between cleaning and pouring concrete.

3.3 ERECTION

- .1 Do welding work in accordance with CSA W59 and ANSI/AWS D3.6 – 89 unless specified otherwise.
- .2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
- .3 Provide suitable means of anchorage acceptable to the engineer such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.
- .4 Exposed fastening devices to match finish and be compatible with material through which they pass.

3.4 PERMANENT FORMING

- .1 Formwork shall be constructed to the dimensions and dimensions shown on the plan.
- .2 Formwork shall be manufactured using folded steel plates. The use of steel split hoses will not be permitted in the manufacture of steel elements.

- .3 Before final shaping of formwork, verify the condition and dimensions of the existing structure, notify the engineer of any discrepancies or potential problems detected and wait for the engineer's instructions.
- .4 Install a valve at the bottom of the formwork for placement of the concrete.
- .5 Openings between the shuttering walls and the piles shall be secured with tow, jute or other products preventing concrete from escaping from formwork.
- .6 It is the responsibility of the Contractor to select an appropriate working method without damaging the piles to secure and hold the formwork during the execution of the work.

3.5 SUPPORTS, HOOKS AND STUDS

- .1 Brackets: Brackets consist of a 50.8 x 50.8 x 6.35 mm HSS half on which 65 mm long M12.5 bolts are welded in the factory prior to installation at the job site.
This supports will subsequently be welded to piles. See map for details.
- .2 Hooks: hooks will be welded to the permanent formwork at the factory to secure the formwork to the piles. The other hooks will be welded on site.
- .3 Dowels: Studs shall be 12.7 mm in diameter by 65 mm in length and welded in the factory to permanent formwork

3.6 INSPECTION AND CONTROLS

- .1 Provide a written description of welding procedures for approval by the departmental representative four (4) weeks prior to commencement of work.
- .2 The Departmental Representative reserves the right to carry out a non-destructive examination of welds made at the site. Examination costs will be at the expense of the Department.
- .3 The Contractor shall provide the Departmental Representative with all facilities and assistance required for the examination of the welds at no cost to the Department.
- .4 If the inspection reveals a defect to be repaired, the weld must be repaired and inspected again. The Contractor shall modify his method of welding so as to eliminate any defects found. Repairs and second inspection shall be at the expense of the Contractor.
- .5 Provide Departmental Representative with inspections at manufacturing, assembly and / or assembly plant.
- .6 Report to Departmental Representative any gaps in equipment or any assembly difficulties at the site. Corrections, if any, shall be made to the satisfaction of the departmental representative.
- .7 For underwater welds, welds shall be qualified by the departmental representative. The coupons and the expenses of the tests shall be borne by the Contractor. Welders who do not meet the requirements will not be allowed to do the work.

3.7 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11- Cleaning.
 - .1 Leave Work area clean at end of each day.

- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11- Cleaning.
- .3 Waste Management: separate waste materials for recycling.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.8 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by metal fabrications installation.

END OF SECTION

