

Partie 1 General

1.1 WORK COVERED BY CONTRACT DOCUMENTS

- .1 The work covered by this contract includes, but is not limited to, the complete replacement of the surface layer of asphalt concrete, the repair of several wharf components, the construction of two concrete beams, the installation of electrical lines and a water main liner, and the repair of deteriorations to the wheelguards.

1.2 LIST OF WORK DESCRIPTIONS

- .1 This description of work is not necessarily complete and does not relieve the Contractor of the responsibility to carry out any other work, changes or modifications necessary or appropriate to satisfactorily complete the Work under this Project.

1.3 DESCRIPTION OF WORK

- .1 The Contractor must use the access route indicated in the drawing to access the worksite. It must install a temporary barrier at the entrance of this access route and remove the farm fence including the concrete blocks. The Contractor must restore the access route and the farm fence to their condition prior to the work.
- .2 The construction of two concrete beams:
 - .1 Mass excavation and embankment.
 - .2 Partial demolition of the cope walls and buttresses to free the existing reinforcing steel.
 - .3 Supply and installation of reinforcing steel and formwork.
 - .4 Supply and installation of concrete.
- .3 Replace the wharf's surface layer:
 - .1 Excavate a ± 75 mm layer of the existing coated material and dispose of it off-site.
 - .2 Excavate and demolish various concrete repairs as well as the 200 mm thick concrete slab. Dispose of the materials off-site.
 - .3 Excavate the layer of crushed rock located under the asphalt concrete until the level indicated. If there are hollow areas under the infrastructure line, they must be filled with the same material.
 - .4 Off-site shipment and the cost of disposing of non-reusable excavated material.
 - .5 Water main liner and electrical lines to be dismantled.
 - .6 Install a geotextile as indicated in the drawing.
 - .7 Place a lower granular subbase consisting of a 300 mm layer of MG-56 and an upper granular subbase consisting of a 200 mm layer of MG-20.
 - .8 Install a 225 mm thick steel-reinforced concrete slab. Streamline the concrete slab based on the elevations shown in the drawing.
- .4 Recovery and fabrication of the precast slab:

- .1 A series of precast slabs will be recovered for installation on top of the walls of the two caissons.
- .2 A concrete slab will be poured in situ or precast to fill the missing part.
- .3 If there are hollow areas between the caissons, they must be filled with excavated materials before the slabs are installed.
- .5 Repair any damage observed on the buttress of the cope wall and the mooring bollard:
 - .1 Use a saw mark in the sound concrete to identify the surface to be repaired.
 - .2 Demolish the concrete with the appropriate equipment.
 - .3 Install the anchoring and reinforcing steel, as illustrated in the drawing, where necessary.
 - .4 Install the formwork and place the filler concrete.
 - .5 Remove the formwork and fill the holes left by the form ties.
- .6 Repair two collapsed areas of the existing concrete slab:
 - .1 Use a saw mark around the collapsed area to identify it. The saw mark must be located at least 400 mm from the collapsed areas to free up the existing reinforcing steel, as illustrated in the drawing.
 - .2 Demolish the concrete with the appropriate equipment.
 - .3 Fill in the hollow areas with lean concrete.
 - .4 Install the anchoring and reinforcing steel, as illustrated in the drawing.
 - .5 Plan for the construction joints.
 - .6 Place the concrete.
- .7 Build three steel-reinforced concrete slabs on top of the buttresses:
 - .1 If there are putrefiable materials, they must be removed and the space filled with crusher run stone from the excavation materials.
 - .2 Fill the hollow area with lean concrete if compaction is not possible.
 - .3 Install the anchoring and reinforcing steel, as illustrated in the drawing.
 - .4 Install the formwork and pour the filler concrete. Streamline the concrete slabs based on the elevation of the new concrete slab next to them.
 - .5 Plan for the construction joints.
 - .6 Remove the formwork and fill the holes left by the form ties.
- .8 Supply and install the precast concrete bases to accommodate water and electricity at a later time.
- .9 Supply and install electrical lines with accessories for line drawing at a later time.
- .10 Supply and install the water main liners with accessories and HDPE liner. The liners must be installed to slope gradients in order to achieve appropriate drainage of the lines at the end of the season.
- .11 When the work is completed, the Contractor must prepare an as-built drawing in AutoCAD file format.
- .12 Carry out final cleaning of the construction area, remove the work site trailer and dismantle the safety perimeter.

1.4 SCOPE OF WORK

- .1 The work included in this Project includes the provision of all materials, the provision of labour, tools, equipment, protection and transport needed to build and complete all work in accordance with the requirements specified in the various sections of the specifications such that the effect is standardized for the entire property.

1.5 CNESST REQUIREMENTS

- .1 The Contractor must provide supporting documents showing that it and its subcontractors have complied with the requirements of the Commission des normes, de l'équité, de la santé et de la sécurité du travail du Québec (CNESST).
- .2 Under the provisions of the *Act Respecting Occupational Health and Safety* (R.S.Q., c. S-2.1) and only for the purposes of that Act, it is the Contractor's duty to assume from the start of work, first the role and responsibilities of the prime contractor as set out in said Act in addition to the obligations based on the employer status assigned to the Contractor under same Act and, second, its obligations with respect to the health and safety requirements herein set forth.

1.6 WORK COMMENCEMENT AND COMPLETION

- .1 The Contractor must commence as early as possible after receiving the notice of bid acceptance.
- .2 The Contractor will be authorized to work from 7 a.m. until 6 p.m., from Monday to Friday. The Departmental Representative may authorize overtime outside of regular work hours and on weekends if the Contractor requests that overtime 48 hours in advance. Any overtime requested less than 48 hours in advance will be automatically refused by the Departmental Representative.
- .3 The Contractor is responsible for planning all work and schedules based on the continuity of services that must be ensured, as prescribed in section 01 14 00 – Work Restrictions.

1.7 CONTRACTOR USE OF PREMISES

- .1 Use of the premises is limited to the areas necessary for performance of the work identified in the drawings. Any changes concerning the use of the site must be approved in writing jointly by the Departmental Representative and the Contractor.
- .2 Execute work with the least possible interference or disturbance to occupants and normal use of site installations. Access to the boat ramp must at all times be free during the entire work period.
- .3 Obtain and pay for use of additional storage or work areas needed for operations under this Contract. Storage of material is prohibited in the boat and boating equipment storage area.
- .4 Concrete trucks must not be washed on the wharf. No discharge of concrete into the water or onto the rock ballast will be permitted.
- .5 During the work, avoid damaging the parts that will stay in place.
- .6 At completion of the work, the condition of the site must be equal to or better than that which existed before the work started.

1.8 OCCUPANCY OF PREMISES BY DEPARTMENTAL REPRESENTATIVE

- .1 The Departmental Representative will occupy the premises for the entire duration of the construction work.
- .2 Co-operate with the Departmental Representative in scheduling the work to minimize conflict and to facilitate use of the premises by the latter.

1.9 EXISTING UTILITIES

- .1 Prior to shutting off utilities, notify the Departmental Representative as well as the utility companies concerned and obtain necessary authorizations.
- .2 Where work involves breaking into or connecting to existing services, give Departmental Representative 48 hours' notice for necessary interruption of mechanical or electrical service. Keep duration of interruptions at a minimum. Carry out work at times as directed by governing authorities with minimum disturbance to vehicular traffic and tenant operations.
- .3 Prior to the commencement of work, determine the extent and location of utility conduits located in the work area and inform the Departmental Representative accordingly.
- .4 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.
- .5 Protect, relocate or maintain existing active services. When inactive services are encountered in the course of the work, cap off in manner approved by the competent authorities.
- .6 Record locations of maintained, re-routed and abandoned service lines.

1.10 INSPECTION AND RECORDING

- .1 Before sending in its bid, the Contractor should visit the site to become familiar with its existing conditions and examine all other details that may affect the cost of the work. Ignorance of local conditions shall in no case constitute a valid reason for claiming additional payment.

1.11 DOCUMENTS REQUIRED

- .1 Maintain at job site one copy of each of the following documents:
 - .1 Contract drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Reviewed shop drawings.
 - .5 List of outstanding shop drawings.
 - .6 Change orders.
 - .7 Other modifications to the 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 indicated.

Partie 2 Products

2.1 NOT APPLICABLE

.1 Not applicable.

Partie 3 Execution

3.1 NOT APPLICABLE

.1 Not applicable.

END OF SECTION

Partie 1 General

1.1 ACCESS AND EGRESS

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

1.2 USE OF SITE AND FACILITIES

- .1 Install a security perimeter consisting of work site fencing, cones and signage, as specified in Section 01 52 00 – Construction Facilities.
- .2 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Departmental Representative to facilitate Work as stated.
- .3 The boat ramp must always remain operational. Keep the boat ramp lane clear and do not obstruct its use or store materials or tools there.
- .4 Where security is reduced by work, provide temporary means to maintain security.
- .5 Protect work temporarily until permanent enclosures are completed.

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 at a minimum. Carry out interruptions after normal working hours of occupants, preferably on weekends.
- .3 Provide for safe personnel, pedestrian and vehicular traffic.

1.4 REQUIREMENTS UNDER THE NAVIGABLE WATERS PROTECTION ACT

- .1 The Contractor must ensure that notices to shipping are issued at least forty-eight (48) hours before in-water work commences and must update these as operations progress or in the event of faulty aids to navigation, to the attention of:

Canadian Coast Guard, Notices to Shipping Office – Les Escoumins MCTS Centre,
email: OPSAVIS@dfo-mpo.gc.ca, telephone: 418-233-2308, fax: 418-233-3299
- .2 For the purpose of issuing notices to shipping, provide the following information:
 - .1 Description and identification of ships and launches to be used, the equipment, the work method, and work phases and scheduling.
 - .2 The characteristics of the aids to navigation as well as the dates on which permanent or temporary aids to navigation will be installed and removed.
 - .3 Any unexpected situation or change in the approved plans or conditions that may affect the safety of navigators.
 - .4 Inform if temporary aids to navigation are moved or are defective.

- .3 The Contractor must comply with the *Navigable Waters Works Regulations*: “No person shall permit any tools, equipment, vehicles, temporary structures or parts thereof used or maintained for the purpose of building or placing a work in a navigable water to remain in such water after the completion of the project.”

1.5 SECURITY

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

1.6 SMOKE-FREE ENVIRONMENT

- .1 Comply with smoking restrictions. Smoking is not permitted anywhere at the Maurice-Lamontagne Institute (MLI) site.

Partie 2 Product

2.1 NOT APPLICABLE

- .1 Not applicable.

Partie 3 Execution

3.1 NOT APPLICABLE

- .1 Not applicable.

END OF SECTION

Partie 1 General

1.1 LIST OF HOURLY RATES

- .1 10 days after notification of acceptance of the offer, the Contractor shall submit in writing to the Departmental Representative, the list of hourly rates for labor, equipment and machinery required to complete the works.
 - .1 Hourly rates for labor, equipment and machinery shall be representative of the market and derived from industry-recognized reference works including:
 - .1 Equipment rental rates, labor and tools of the Government of Quebec Shared Services Center.
 - .2 Hourly labor cost rates for the Quebec construction industry available on the ACQ and CCQ websites.
 - .3 Directory of the cost of labor published by the corporation des entrepreneurs généraux du Québec.
 - .2 This list must be authorized in writing by the Ministerial Representative.
 - .3 In the event of a notice of modification to the project, the list of hourly rates of the Contractor approved by the Departmental Representative will be used as a reference for the evaluation of the costs related to the modifications.
 - .4 Any machinery, personnel or equipment not specified on this list must be the subject of a written agreement between the Contractor and the Departmental Representative. These rates will be set in accordance with items 1.1.1.1.
 - .1 When rates are not indicated in the various references, the rates must be negotiated between the Departmental Representative and the Contractor.

1.2 MEASUREMENT PROCEDURES

- .1 The materials, labour, tools, equipment, protective devices, transportation, administrative charges, profits, financing, etc. required to carry out the work set out herein are included in each of the items described below, unless otherwise indicated.
- .2 The Contractor must provide, no later than ten days after the date of bid acceptance, an overall unit cost breakdown for each item. For mobilization and demobilization, the costs associated with each planned item of equipment must be broken down. Any item that cannot be included in a specific item of the bid submission will be included in the Work Site Organization item.
- .3 The quantification method for the labour, tools or equipment constituting the work will be as follows:
 - .1 Part 1- Lump sum work:
The following items will be measured globally and the percentage of progress will be determined jointly by the Contractor and the Departmental Representative. Where no agreement can be reached on the percentage of progress, that measured by the Departmental Representative will prevail.

.1 Work Site Organization:

This item includes the installation of a work site trailer, sanitary facilities for workers, the installation of barriers to close off the work area reserved for the Contractor, as well as mobilization of workers and equipment to the site, preparation of access roads and site restoration. It also includes all other elements that are not part of other measurement items and may be necessary to carry out the work, such as temporary structures, the use of floating equipment and special equipment, etc.

This item includes all elements of Division 01 of the specification related to this portion of the project and payment thereof will be prorated to work progress based on the cost of work indicated in the bid submission.

.2 Demolition:

This item includes the equipment, labour, and waste transport and disposal costs necessary to carry out the demolition work.

This demolition work includes partial demolition of steel-reinforced cope walls and their steel-reinforced buttresses, partial demolition of the steel-reinforced concrete slab, removal of pavement, electrical lines and the water main liner, as well as the delaminated concrete surfaces to be removed, the saw marks and the slab portions to be demolished.

The bid price must include the cost of removing all debris from the site, sorting it and disposing of it at an approved site.

.3 Precast Concrete Slabs (Removal and Reinstallation):

This item include the removal of the existing bolted precast concrete slabs and placing them in their new location as shown in the drawing.

.4 Beams and Cope Walls:

This item includes the two steel-reinforced concrete beams as well as the four sections of steel-reinforced cope wall.

It also includes the equipment, labour and materials needed to create the steel-reinforced components.

In addition, the item also covers the reinforcing steel, any necessary overlapping reinforcements, the adhesive between the existing and the fresh concrete, the concrete and its placement, as well as the sealing of openings left by the form ties.

.5 Slabs Between Caissons:

This item includes the three slabs to be poured in situ between the two caissons.

It includes the equipment, labour and materials needed to carry out this item.

The item also covers the anchorings, the chemical anchorings, the drilling of holes to anchor the anchorings, the reinforcing steel, the temporary formwork and the fresh concrete.

.6 Electrical Lines:

This item includes the equipment, labour and materials necessary to carry out the item.

It also covers the electrical lines with all accessories, the fish cord as well as the connection to the service supplies with the dilation sleeve and the temporary caps.

.7 Water Main Liner:

This item includes the equipment, labour and materials necessary to carry out the item.

The item also includes the supply and installation of the water main liner with all accessories (connecting sleeve, elbows, caps and restraint systems) based on the levels indicated in the drawing.

.8 Concrete Repairs:

This item include the repair of the cope wall buttress as well as the concrete base of the mooring bollard.

The item also covers preparation of the surfaces to be repaired, the saw marks, removal of the damaged concrete, the adhesive between the existing and the fresh concrete, temporary formwork and the concrete.

.9 Concrete Base (Service Supplies):

This item will be measured as an overall unit and includes the four concrete bases designed to receive the planned service supplies.

It also covers the galvanized protective posts, the fresh concrete, the reinforcing steel and the pipes buried in the concrete.

The asphalt planking and elastomeric membrane and the sealant around each service supply are part of item 13 - Steel-Reinforced Concrete Slab.

.10 Manholes:

This item includes the three manholes shown in the drawing. It also includes the concrete, reinforcing steel, monolithic openings, frame and cover, galvanized steel ladder with all accessories, anchorings and the sealant for the steel frame.

The asphalt planking and elastomeric membrane and the sealant around each manhole are part of item 13 - Steel-Reinforced Concrete Slab.

.11 Geotextile:

This item include the purchase, handling and installation of the geotextile based on indications in the drawing.

.12 Excavation:

This item includes equipment, labour and disposal of the aggregate materials at approved landfill sites.

The excavation work must be conducted so as to separate the layers of soil as excavation progresses and in accordance with the contaminant concentration levels in the criteria range (< A, AB, BC and C under the *Regulation Respecting the Burial of Contaminated Soils*, or RBCS), as indicated in drawing RM16021M, sheet C11/11.

The overall unit costs will be subdivided into four categories based on contaminant concentration level.

- .1) < A materials (789 cubic metres)
- .2) AB materials (124 cubic metres)
- .3) BC materials (13 cubic metres)
- .4) C-RBCS materials (37 cubic metres)

Note: A quantity of 224 cubic metres of < A materials will be reused as part of this project.

.2 Part 2- Unit Price Work:

All unit price items must be measured jointly by the Contractor and the Departmental Representative. Where no agreement can be reached on the quantities, those measured by the Departmental Representative will prevail.

.13 Steel-Reinforced Concrete Slab (Traffic-Bearing Surface):

This item will be measured by square metre of surface incorporated into the structure and includes the equipment, labour and materials necessary to carry out the item.

The item also covers the expansion joints, control joints, the drilling of holes to anchor the reinforcing steel with chemical anchoring, the overlapping steel reinforcements, the asphalt planking and elastomeric membrane, the sealant, the concrete and finishing of the fresh concrete.

.14 Filler Concrete (Type 2 Concrete):

This item will be measured by cubic metre of concrete incorporated into the structure to fill the hollow areas under the existing concrete slab.

It also includes removal of debris from under the slab (vegetation, cords, wood and steel) and the concrete.

An estimated quantity of five (5) cubic metres has been identified for this item.

.15 Aggregate Materials:

Each separate item will be measured by metric tonne and includes the supply, transportation, equipment and labour necessary to carry out the

placement of every category of aggregate material listed below and as specified in the drawings and specifications. Each item includes production, transportation, weighing, placement and compaction in the structure.

- .1 MG-20 370 MT
- .2 MG-56 670 MT
- .3 CG-14 160 MT
- .4 Pit run (reused material): 490 MT

This quantity of pit run represents 224 cubic metres of excavated soil from the excavation work, the materials criteria of which is "below A."

Partie 2 Products

2.1 NOT APPLICABLE

- .1 Not applicable.

Partie 3 Execution

3.1 NOT APPLICABLE

- .1 Not applicable.

END OF SECTION

Partie 1 General

1.1 PRECONSTRUCTION MEETING

- .1 Within 15 days of bid acceptance, and before the Contractor mobilizes at the site, the Departmental Representative will organize a kickoff meeting with each of the parties to the contract in order to discuss the administrative procedures and to define each party's responsibilities.
- .2 The Departmental Representative, the Contractor, the major subcontractors and the work site inspectors must attend this meeting.
- .3 Agenda to include the following:
 - .1 Appointment of official representatives of participants in the Work.
 - .2 Work schedule.
 - .3 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, and fences.
 - .4 Work method of the Contractor and its subcontractors.
 - .5 Source of backfill material (aggregate, rock, etc.).
 - .6 Authorizations and certificates for disposal of demolition materials.
 - .7 Proposed change orders, change approvals, procedures, required approvals, overtime and other administrative requirements.
 - .8 List of machinery prices and the cost of labour in the Québec construction industry in civil engineering.
 - .9 Monthly progress claims, administrative procedures, photographs, hold backs.
 - .10 Appointment of inspection and testing agencies or firms.

1.2 MEETINGS TO REVIEW PROGRESS

- .1 The Departmental Representative will establish a schedule of meetings that will take place at least every month during work progress. Depending on work progress, the frequency of the meetings may change.
- .2 Contractor, major subcontractors involved in Work, Departmental Representative, site supervisor and any other party involved are to be in attendance.
- .3 The parties will be notified a minimum of five business days prior to meetings.
- .4 The Departmental Representative will record minutes of meetings and circulate to attending parties and affected parties not in attendance within five business days after each meeting.
- .5 The Contractor must provide physical space and make arrangements for meetings.
- .6 Agenda to include:
 - .1 Review and approval of minutes of previous meeting.
 - .2 Review of Work progress since previous meeting.
 - .3 Field observations, problems, conflicts.

- .4 Problems impeding construction schedule.
- .5 Review of off-site fabrication delivery schedules.
- .6 Corrective measures and procedures to regain projected schedule.
- .7 Revision of construction schedule.
- .8 Review of progress schedule throughout the successive work stages.
- .9 Review submittal schedules: expedite as required.
- .10 Maintenance of quality standards.
- .11 Review of proposed changes and their possible implications on the construction schedule and completion date.
- .12 Other business.

Partie 2 Product

2.1 NOT APPLICABLE

- .1 Not applicable.

Partie 3 Execution

3.1 NOT APPLICABLE

- .1 Not applicable.

END OF SECTION

Partie 1 General

1.1 RELATED REQUIREMENTS

- .1 01 35 29.06 – Health and Safety
- .2 03 20 00 – Concrete Reinforcing
- .3 03 30 00 – Cast-in-Place Concrete
- .4 26 05 00 – Electricity – Regulatory Requirements
- .5 26 05 34 – Conduits, Conduit Fastenings and Conduit Fittings
- .6 31 05 16 – Aggregate Materials
- .7 31 32 19.02 – Soil Stabilization with Geotextiles
- .8 33 11 16 – Site Water Utility Distribution Piping

1.2 ADMINISTRATIVE DETAILS

- .1 Submit all required submittals to the Departmental Representative for review. Submittals are to be submitted promptly and in a predetermined order so as not to cause any delay in the execution of 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 Work for which the submission of documents and samples is required shall not be started until all of the items submitted have been fully reviewed.
- .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, provide soft converted values.
- .5 Review submittals prior to submission to Departmental Representative. Such preliminary review and examination constitute confirmation by the Contractor that the requirements applicable to the work have been or will be determined and verified and that every document and sample submitted has been reviewed or examined and found to conform to the work requirements and contract documents. Documents and samples that are not stamped, signed, dated and identified as pertaining to the specific project will be returned without being examined and will be deemed to have been rejected.
- .6 Notify Departmental Representative, in writing at time of submission of documents and samples, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .7 Verify the accuracy of field measurements in relation to affected adjacent works.
- .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 submitting items conforming to requirements of Contract Documents is not relieved by Departmental Representative's review of documents and samples.

- .10 Keep one reviewed copy of each submittal on site.

1.3 SHOP DRAWINGS AND PRODUCT DATA

- .1 “Shop drawings” means drawings, diagrams, illustrations, tables, performance charts, brochures and other documentation the Contractor is required to provide to show in detail any part of the structure.
- .2 Submit drawings stamped and signed by professional engineer registered or licensed in the province of Quebec.
- .3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .4 Allow 5 days for Departmental Representative to review each submission.
- .5 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect Contract Price, 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 duplicate, containing:
 - .1 the date;
 - .2 project name and number;
 - .3 name and address of the Contractor;
 - .4 identification and quantity of each shop drawing, product data and sample;
 - .5 other pertinent data.
- .8 Submittals include:
 - .1 date of production and dates of revisions;
 - .2 project name and number;
 - .3 name and address of:
 - .1 subcontractor;
 - .2 supplier;
 - .3 manufacturer.
 - .4 Contractor’s stamp signed by the Contractor’s designated representative certifying that the documents submitted are approved, that the measurements taken on site have been verified and that everything meets the requirements set out in the contract documents;
 - .5 pertinent details of the portions of work concerned:
 - .1 fabrication details and materials;

- .2 layout or configuration, with dimensions, including dimensions measured on site, as well as leeway and clearances;
 - .3 assembly and adjustment details;
 - .4 capacities, such as power, flow or loading capacity;
 - .5 performance characteristics;
 - .6 reference standards;
 - .7 operating weight;
 - .8 wiring diagrams;
 - .9 single line and schematic diagrams;
 - .10 relationship to adjacent works.
- .9 After Departmental Representative's review, distribute copies of shop drawings and product data.
- .10 Submit one (1) electronic copy and two (2) printed copies of the shop drawings required in the technical sections of the specifications and as the Departmental Representative may reasonably require.
- .11 Submit one (1) electronic copy of product data sheets or manufacturer documentation 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 the test reports prescribed in the technical sections of the specifications and as required by the 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 accordance with specified requirements.
 - .2 Testing must have been within three (3) years of date of contract award for project.
- .13 Submit one (1) electronic copy of the certified required in the technical sections of the specifications and as required by the 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, as prescribed in the technical sections of the specifications and required by the 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 testing reports, as prescribed in the technical sections of the specifications and required by the Departmental Representative.

- .16 Documentation of the testing and verification actions taken by the manufacturer's representative to confirm compliance of installed products, materials, equipment or systems with the manufacturer's 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, fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy to 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 the Departmental Representative is for sole purpose of ascertaining conformance with general concept.
 - .1 This review shall not mean that the Departmental Representative approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting all requirements of construction and Contract Documents.
 - .2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of all sub-trades.

1.4 SAMPLING

- .1 The Contractor is responsible for quality control of its suppliers and must bear the costs associated with materials characterization. It must demonstrate that the various materials that are part of the structure meet the contract requirements.
 - .1 The different concrete mixture formulas must be analyzed by a certified laboratory and submitted to the Departmental Representative at least 7 days before the first pour.
 - .2 The grading of the aggregate material must be analyzed by a certified laboratory and submitted to the Departmental Representative at least 7 days before placement.

1.5 QUALITY CONTROL

- .1 During placement of the granular subbase and the fresh concrete, quality control will be carried out by the Departmental Representative.
- .2 The Departmental Representative reserves the right to carry out other tests directly on site in order to validate the results obtained by the Contractor.
- .3 The Departmental Representative reserves the right to visit the quarries and suppliers for the purpose of effective, ongoing quality control.

1.6 PHOTOGRAPHIC DOCUMENTATION

- .1 Conduct a photographic survey of the site before commencing the Work and submit to the Departmental Representative one (1) copy of the digital photograph file on an electronic medium. The number of photographs and the number of perspectives are left to

the Contractor's discretion. However, the survey must fully cover the entire work site area.

- .1 The photographic survey may be replaced with a high-definition 1080i or equivalent video survey.
- .2 Throughout the Work, the Contractor must take photographs or a video of work progress. These photos are to be submitted to Departmental Representative as the Work progresses.
 - .1 When the Work is completed, the Contractor must provide the Departmental Representative with a digital copy of all photographs and videos taken during the Work.

1.7 LAND SURVEYING

- .1 Conduct a land survey compatible with AutoCAD software during the excavation and backfill work. This survey must be georeferenced with tidal elevation based on the benchmark indicated on the drawing and must include the following:
 - .1 Elevation of the bottom of the excavation.
 - .2 The coordinates (X Y Z) for MG-56.
 - .3 The coordinates (X Y Z) for MG-20.
 - .4 The coordinates (X Y Z) for the slab.
 - .5 The coordinates (X Y Z) for the two new beams.
 - .6 Elevation and positioning of conduits and various components left in place during excavation.
- .2 The surveys must be carried out as the Work progresses and submitted via a digital medium (email, USB key, etc.) to the Departmental Representative no later than 48 hours after the survey of each step set out in Section 1.6.1.

Partie 2 Execution

2.1 NOT APPLICABLE

- .1 Not applicable.

Partie 3 Execution

3.1 NOT APPLICABLE

Not applicable.

END OF SECTION

Partie 1 General

1.1 REFERENCES

- .1 Not applicable.

1.2 PROTECTION OF PUBLIC TRAFFIC

- .1 Work on the spur wharf of the Maurice-Lamontagne Institute will significantly increase heavy vehicle traffic on Route 132. Because the entrance to the Maurice-Lamontagne Institute is located on a curve, the increase in heavy traffic may be disruptive to local traffic.
- .2 Comply with the requirements of applicable statutes, regulations and orders concerning traffic and the use of roads requiring work or roads used to transport materials.
- .3 The Contractor must supply a signage plan for the Work period from Route 132 to the work site.
- .4 Lanes of road may only be closed after receipt of written approval from Departmental Representative.
- .5 Keep Route 132 free of debris and dust.
- .6 Clean roadways used regularly by the Contractor's vehicles during the Work period.
- .7 The Contractor must repair, at its expense and as the Work progresses, any damages it causes to public roads in order to restore these to at least their original condition, to the satisfaction of the authorities concerned.

1.3 INFORMATION AND WARNING DEVICES

- .1 Provide and maintain signs and other devices required to indicate construction activities or other temporary and unusual conditions resulting from project work which may require road user response.
- .2 Meet with Departmental Representative prior to commencement of Work to prepare list of signs and other devices required for project. If the situation on site changes, revise list to approval of Departmental Representative.
- .3 Maintain all traffic control devices as follows:
 - .1 Check signs daily for legibility, damage, suitability and location. Clean, repair or replace to ensure clarity and reflectance.
 - .2 Remove or cover signs that do not apply to conditions existing from day to day.

1.4 TRAFFIC RESTRICTIONS

- .1 Maintain existing conditions for traffic throughout construction period.

Partie 2 Product

2.1 NOT APPLICABLE

.1 Not applicable.

Partie 3 Execution

3.1 NOT APPLICABLE

.1 Not applicable.

END OF SECTION

Partie 1 General

1.1 GENERAL NOTE:

- .1 In this section, the term “site” includes all the facilities located at the site where the work is taking place (site, buildings, access, infrastructure, parking, bays, etc.).
- .2 The Contractor must manage operations in such a way that the health and safety of its personnel and the public, as well as the protection of the environment, always take precedence over considerations of cost and scheduling.

1.2 REFERENCES

- .1 Province of Quebec
 - .1 *Act Respecting Occupational Health and Safety*, R.S.Q., c. S-2.1
 - .2 *Safety Code for the Construction Industry*, R.S.Q., c. S-2.1, r.4
- .2 *Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations*
- .3 *Canada Shipping Act – Collision Regulations*, CRC, c. 1416
- .4 CAN/CSA Z259.10-12 Full Body Harness.
- .5 CAN/CSA-65.7-2007– Life Jackets.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Forward to Departmental Representative and to the CNESST the prevention program specific to the construction site, as described in section “GENERAL REQUIREMENTS” at least 10 days prior to the start of the work.
- .3 Departmental Representative will review Contractor's prevention program for the site and provide comments to Contractor within 10 business days after receiving document. Revise prevention program as appropriate and resubmit plan to Departmental Representative within 5 days after receiving comments from Departmental Representative. The Departmental Representative reserves the right not to authorize commencement of the Work at the construction site until the content of the prevention program is found to be satisfactory. The Contractor must then update the prevention program and submit it to the Departmental Representative if the scope of work changes, if the Contractor's work methods differ from its initial plans, or for any other new applicable condition.
- .4 The Departmental Representative's review of Contractor's prevention program for the site should not be construed as approval and does not reduce the Contractor's overall responsibility for construction health and safety.
- .5 Submit to Departmental Representative at least once a week the health and safety inspection reports carried out at the worksite by the Contractor's authorized representative.
- .6 Submit to Departmental Representative, within 24 hours, a copy of any inspection report, correction notice or recommendation issued by the health and safety inspectors of the federal, provincial or territorial governments.

- .7 Submit to Departmental Representative, within 24 hours, an investigation report on any accident resulting in injury or any incident that brings to light a potential hazard.
- The investigation report must contain the following information, as a minimum:
1. Date, time and place of the accident;
 2. Name of the subcontractor involved in the accident;
 3. Number of persons involved and condition of the injured;
 4. Identification of witnesses;
 5. Detailed description of tasks being performed at the time of the accident;
 6. Equipment used to carry out the tasks being performed at the time of the accident;
 7. Corrective actions taken immediately following the accident;
 8. Causes of the accident;
 9. Preventive measures introduced to avert a similar accident.
- .8 Submit WHMIS Material Safety Data Sheets (MSDS) to Departmental Representative. The Contractor must also keep a copy of these records at the job site.
- .9 Medical surveillance: Where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Departmental Representative. Provide the Departmental Representative with an additional certification for any new employee working at the job site.
- .10 Provide the Departmental Representative with an emergency response plan at the same time as the prevention program. This emergency response plan must contain the elements listed under the GENERAL REQUIREMENTS subsection of this section.
- .11 Provide the Departmental Representative with a copy of the training certificates for workers at the site, in particular for the following training (where applicable):
- .1 workplace first aid and CPR;
 - .2 work likely to produce asbestos dust (mandatory for any work involving asbestos);
 - .3 work in confined spaces (mandatory for any work in confined spaces);
 - .4 lockout/tag-out (mandatory for any work requiring lockout/tag-out);
 - .5 safe operation of lift trucks (mandatory for any use of lift trucks);
 - .6 safe operation of elevating platforms (mandatory for any use of elevating platforms);
 - .7 any other training required by regulations or by the prevention program.
- .12 In addition, the attestations for the general health and safety course for construction sites must be available upon request at the job site.
- .13 Drawings and certificates of compliance: The Contractor must submit to the Departmental Representative and the CNESST a copy, signed and sealed by an engineer, of all drawings required under the *Safety Code for the Construction Industry* (S-2.1, r.4) or under any other statutes, regulations, or clause of the specifications or contract. It must also submit a certificate of compliance signed by an engineer upon completion of the installation for

which the drawings were prepared and before anyone uses that installation. A copy of these documents must at all times be available at the site.

1.4 FILING OF NOTICE OF SITE OPENING

- .1 Before Work commences, file notice of worksite opening with CNESST. Provide the Departmental Representative with a copy of the notice of worksite opening and the acknowledgement of receipt from the CNESST.

Once all work is completed, the notice of site closure must be sent to the CNESST, copying the Departmental Representative.

- .2 The Contractor must serve as principal contractor at all times within the boundaries of the worksite and everywhere else where it must carry out work as part of this project. The Contractor must acknowledge its responsibility as principal contractor and identify itself in this capacity in the notice of worksite opening sent to the CNESST.
- .3 Contractor must agree to install proper site separation and identification in order to maintain time and space at all times for the duration of the project.

1.5 RISK/HAZARD ASSESSMENT

- .1 Conduct an assessment of safety risks/hazards related to work performed on the site.

1.6 MEETINGS

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

1.7 REQUIREMENTS OF REGULATORY AGENCIES

- .1 Comply with all statutes, regulations and standards applicable to performance of the work.
- .2 Comply with prescribed standards and regulation to ensure normal progress of work on land contaminated by hazardous or toxic materials.
- .3 Always use the most recent version of the standards cited in the *Safety Code for the Construction Industry* (S-2.1, r.4) regardless of the date indicated in the code.

1.8 COMPLIANCE REQUIREMENTS

- .1 Comply with the *Act Respecting Occupational Health and Safety* (R.S.Q., c. S-2.1) and the *Safety Code for the Construction Industry* (c. S-2.1, r.4) as well as with all requirements hereunder.

1.9 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 *Act Respecting Occupational Health and Safety* (R.S.Q., c. S-2.1) and the *Safety Code for the Construction Industry* (S-2.1, r.4).
- .2 The Contractor must be responsible for health and safety of persons on the site, safety of property on the site and for the protection of persons adjacent to the 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 site, the Contractor must clearly define the limits of the site by physical means and respect all specific regulation requirements applicable in this regard. The means chosen to define the limits of the 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 program.

1.10 GENERAL REQUIREMENTS

- .1 Before undertaking the work, prepare a site-specific prevention program based on the hazards identified under “RISK/HAZARD ASSESSMENT” and “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 site. The prevention program must take into consideration the specific characteristics of the project and cover all the work to be executed on the site.

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 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 site inspection checklist based on the preventive measures;
- .13 emergency response plan which must contain at least the following:
 - .1 site evacuation procedures;

- .2 identification of resources (police, firefighters, ambulance services, etc.);
- .3 identification of persons in charge of the 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 site's characteristics.

If available, the Departmental Representative will provide the evacuation procedures to the Contractor who must then coordinate the procedure with that of the site and submit it to the Departmental Representative.

- .2 The 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.
- .3 In addition to the prevention program, during the course of the work the Contractor must develop 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.
- .4 The Contractor must plan and organize work so as to foster the elimination of hazards at the source or ensure group protection and thus minimize the need for personal protective equipment.
- .5 Any equipment, tool or means of protection that cannot be installed or used without compromising the health and safety of employees or the public is deemed to be inadequate for the work to be performed..
- .6 All mechanical equipment (for example, but not limited to: hoisting devices for persons or materials, excavators, concrete pumps, concrete saws) must be inspected before delivery to the site. The Contractor must obtain a certificate of inspection signed by a qualified mechanic dated less than a week prior to the arrival of each piece of equipment on the site; the certificate must remain on the site and transmitted to the Departmental Representative on demand.
- .7 Ensure that 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.
- .8 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.
- .9 The Departmental Representative must be consulted for the location of storing gas cylinders and tanks on the 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 site will be exposed to the following risks, inherent to the area where the work will be executed.

At the worksite there is in particular the presence of the following:

- .1 potentially unstable soils;
- .2 body of water close by;
- .3 soils to be excavated in accordance with the range of criteria A, B and C.

The Contractor must proceed with a risk assessment of the site to validate this information and determine if other risks are present on the site. It must include in the prevention program all risks that have been identified.

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

- .1 The worksite is occupied by employees and/or the public during the work, although these persons will not have access to the Contractor's site. The Contractor must take into account the following specific requirements for the protection of employees and/or the public:
 - .1 The access route for the boat ramp.
 - .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 RISKS/HAZARDS

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

1.14 PERSON IN CHARGE OF HEALTH AND SAFETY

- .1 If the site meets the requirements of article 2.5.3 of the *Safety Code for the Construction Industry* (S-2.1, r.4), 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 must solely be dedicated to the management of health and safety on the 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 current project.
 - .3 Have working knowledge of occupational safety and health regulations.
 - .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 site to perform Work.
 - .5 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
 - .6 Be on site at all times during execution of work.

- .7 Inspect the work and ensure compliance with all the regulatory requirements as well as those indicated in the contractual documents or the prevention program.
- .8 Keep a daily log of actions taken and submit a copy to the Departmental Representative each week at a minimum.
- .2 The safety officer's certificate must 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 must designate a competent person to supervise and take responsibility for health and safety, no matter the size of the site or how many workers are present at the workplace. This person must be on 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 site and likely to be affected by any of the work. The Contractor must 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 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 opening of worksite;
 - .2 identification of principal contractor;
 - .3 company policy on occupational health and safety;
 - .4 prevention program specific to the worksite;
 - .5 emergency plan;
 - .6 minutes of worksite committee meetings;
 - .7 names of the worksite committee members;
 - .8 Names of first-aid attendants; and
 - .9 action reports and correction notices issued by the CNESST.

1.16 INSPECTIONS AND CORRECTION OF NON-COMPLIANCES

- .1 Inspect the site and complete the site inspection checklist and submit it to the Departmental Representative in accordance with the article "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 or her agent.
- .3 Provide Departmental Representative with written report of action taken to correct non-compliance of health and safety issues identified.
- .4 The Contractor must 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.

The Contractor must ensure that the health and safety of the public and the workers on site and the protection of the environment always 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 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 sites includes the implementation of measures designed to protect the psychological health of all persons who access the site where the work is taking place. Consequently, in addition to physical violence, verbal abuse, intimidation and harassment are not tolerated on the site. Any person who demonstrates such actions or behaviours will receive a warning and/or could be expelled from the site by the Departmental Representative.

1.18 BLASTING

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

1.19 POWDER ACTUATED DEVICES

- .1 Use powder actuated devices only after receiving written permission from Departmental Representative.
- .2 Every person who uses a sealing gun must have a training certificate and meet all the requirements set out in section 7 of the *Safety Code for the Construction Industry* (S-2.1, r. 4).
- .3 Every cartridge device must be used in accordance with the manufacturer's instructions and the applicable standards and regulations.

1.20 SILICA EXPOSURE

- .1 For any inside or outside work that generates silica dust, the Contractor must comply with the requirements set out below, in addition to those under the *Safety Code for the Construction Industry* (S-2.1, r. 4).
 - .1 Work in wet environments or use tools with a water supply to reduce dust, or collect dust at source and trap in a high efficiency filter to prevent dust being released into the environment.
 - .2 Clean surfaces and tools with water, never compressed air.
 - .3 Sand and clean surfaces using an abrasive with less than 1% silica (also called amorphous silica).
 - .4 Install screens or partitions to prevent dust from spreading outside the work area and hence protect other employees and the public.
 - .5 Wear protective respiratory equipment and eye protection for all operations likely to produce silica dust in accordance with the requirements of the *Safety Code for the Construction Industry* (S-2.1, r. 4).

- .6 Wear a protective suit to prevent contamination outside the site.
- .7 Refrain from eating, drinking or smoking in a dusty area.
- .8 Wash hands and face before drinking, eating or smoking.

1.21 ABRASIVE BLASTING

- .1 Before abrasive blasting commences, the Contractor must:
 - .1 Provide a written procedure that complies with the requirements of section 3.23 of the *Safety Code for the Construction Industry*, S-2.1, r.4.
 - .2 Show that it has all the equipment needed to comply with the procedure and safely perform the work.
 - .3 All sanding and stripping work must be carried out with an abrasive that contains at least 1% silica.

1.22 RESPIRATORY PROTECTION

- .1 The 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 testing to the Departmental Representative on demand.

1.23 PREVENTING FALL RISKS

- .1 The Contractor must plan and organize work so as to help eliminate falling hazards at the source or foster collective protection and thus minimize the need to use personal protective equipment. Where personal fall protection is needed, workers must use a safety harness conforming to standard CAN-CSA-Z-259.10-M90. The safety belt must not be used for fall protection.
- .2 All persons who use an elevating platform (scissor lift, telescoping, articulated or rotating elevating platform, etc.) must have received training to do so.
- .3 Workers must always wear a safety harness when working on a telescoping, articulated or rotating elevating platform.
- .4 A danger zone must be identified around any elevating platform.
- .5 Any opening in a platform or in a roof must be surrounded by a guardrail or blocked with a cover attached to the platform and strong enough to withstand the loads to which it will be subjected, regardless of the dimensions of this opening or the fall height it represents.
- .6 Any person working less than two metres of a location from which a fall of three (3) or more metres could occur must use a safety harness, in accordance with regulatory requirements, unless there is a guardrail or other element to ensure an equivalent level of safety.
- .7 Notwithstanding regulatory requirements, the Departmental Representative may order the installation of guardrails or the use of safety harnesses for certain specific situations where there is a risk of a fall of less than three (3) metres.

1.24 SCAFFOLDING

- .1 Over and above the requirements of the *Safety Code for the Construction Industry*, any Contractor who uses scaffolding must meet the following requirements:
 - .1 Scaffolding must be placed on solid footings so as to prevent it from sliding or tipping.

1.25 EXCAVATION WORK

- .1 Over and above the requirements of the *Safety Code for the Construction Industry*, any Contractor who carries out excavation or shoring/trenching must meet the following conditions:
 - .1 Fill out the form below and submit it to the Departmental Representative before excavation work commences.

- | <h1 style="margin: 0;">Directive de creusage</h1> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| <p>Cette directive de creusage est fournie à titre d'exemple par la Commission de la santé et de la sécurité du travail (CSST). On y trouve les principales indications que l'employeur devrait donner à la personne responsable des travaux sur le terrain et à l'opérateur de l'engin de terrassement.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2" style="height: 30px; vertical-align: top;">Nom de l'entreprise</td> </tr> <tr> <td style="width: 60%; height: 30px; vertical-align: top;">Nom du projet</td> <td style="width: 40%; height: 30px; vertical-align: top;">N° du projet</td> </tr> <tr> <td style="height: 30px; vertical-align: top;">Adresse du chantier</td> <td style="height: 30px; vertical-align: top;">Date du début des travaux</td> </tr> </table> | | Nom de l'entreprise | | Nom du projet | N° du projet | Adresse du chantier | Date du début des travaux | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Nom du projet | N° du projet | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Adresse du chantier | Date du début des travaux | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Repérage
Chainage ou axes : de _____ à _____ Plan annexé <input type="checkbox"/> N° du plan : _____ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Méthode de travail à utiliser
Tout en s'assurant que les parois ne présentent aucun danger de glissement de terrain,
<input type="checkbox"/> creuser et étançonner selon les plans et devis d'un ingénieur;
<input type="checkbox"/> creuser et étançonner en utilisant une boîte de tranchée;
<input type="checkbox"/> creuser sans étançonner pourvu que l'une des conditions suivantes soit respectée :
<input type="checkbox"/> le roc est sain;
<input type="checkbox"/> aucun travailleur ne descend dans la tranchée ou l'excavation;
<input type="checkbox"/> les parois sont creusées conformément à l'avis d'un ingénieur. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dimensions du creusement (Creuser selon le profil suivant.) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1" style="width: 100%; height: 150px; border-collapse: collapse;"> <!-- Grid representation --> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="background-color: #f2f2f2;">Minimale</th> <th style="background-color: #f2f2f2;">Maximale</th> </tr> </thead> <tbody> <tr> <td>H Profondeur</td> <td></td> <td></td> </tr> <tr> <td>Lf Largeur au fond</td> <td></td> <td></td> </tr> <tr> <td>La Largeur en surface</td> <td></td> <td></td> </tr> </tbody> </table> | | Minimale | Maximale | H Profondeur | | | Lf Largeur au fond | | | La Largeur en surface | | |
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| | Minimale | Maximale | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H Profondeur | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Lf Largeur au fond | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| La Largeur en surface | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mesures de sécurité
Déposer les matériaux à une distance d'au moins 1,2 mètre (4 pi) du sommet des parois.
Ne laisser aucun véhicule s'approcher à moins de 3 mètres (10 pi) du sommet des parois.
<input type="checkbox"/> Respecter le plan de l'ingénieur concernant les travaux à proximité d'une construction existante.
<input type="checkbox"/> Suivre le plan de localisation pour repérer les infrastructures souterraines.
<input type="checkbox"/> Installer le matériel de signalisation prévu par le plan de circulation (barrières, repères visuels, etc.).
<input type="checkbox"/> Affecter un ou des signaleurs au contrôle de la circulation.
<input type="checkbox"/> Respecter la méthode prévue pour le travail à proximité des lignes électriques.
<input type="checkbox"/> Mettre en place les dispositifs de protection des travailleurs, par exemple les glissières de sécurité en béton. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; height: 30px; vertical-align: bottom;">Nom</td> <td colspan="2" style="height: 30px; vertical-align: bottom;">Fonction</td> </tr> <tr> <td style="height: 30px; vertical-align: bottom;">Signature</td> <td style="width: 20%; height: 30px; vertical-align: bottom;">Date</td> <td style="width: 30%; height: 30px; vertical-align: bottom;">N° de téléphone</td> </tr> </table> <p>Directive reçue
 <input type="checkbox"/> au responsable des travaux sur le terrain <input type="checkbox"/> à l'opérateur de l'engin de terrassement </p> | | Nom | Fonction | | Signature | Date | N° de téléphone | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Signature | Date | N° de téléphone | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

DC705-SMR-2 (D03140)

1.26 HOT WORK

- .1 “Hot work” means any work that involves the use of an open flame or which may produce heat or sparks, such as the following work: riveting, welding, cutting, grinding, milling, burning and heating, etc.
 - .1 At the start of each work shift and for each sector, the Contractor must obtain a hot work permit issued by the building technical authority.
 - .2 A working handheld extinguisher appropriate to the fire hazard must be available and readily accessible within a 5-metre radius of any flame or source of sparks or intense heat.
 - .3 The Contractor must designate a person to continuously monitor fire risks for a minimum period of one (1) hour after the end of any hot work. This person must sign the section of the permit designated for this purpose and give it to the building technical authority after that hour has gone by.
 - .4 When the hot work is done in areas where there are 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**
 - .1 In addition to the conditions set out in the preceding paragraphs, the Contractor must comply with the following requirements:
 - .1 Welding and cutting must be performed in accordance with the requirements set out in the *Safety Code for the Construction Industry*, S-2.1, r.4., and CSA W117 *Safety in Welding, Cutting & Allied Processes*.
 - .2 An air extraction system with filters must be used for all welding and cutting work performed inside.
 - .3 Suspend any activity that produces gases, vapours or flammable or combustible dust in the proximity of welding or cutting work.
 - .4 Store compressed gas cylinders on a flame-retardant surface and ensure that the room is well ventilated.
 - .5 Store oxygen cylinders at least six (6) metres away from cylinders containing flammable gas (e.g., acetylene) or such combustible materials as oil and grease unless they are separated by a wall made of non-combustible material as specified in section 3.13.4 of the *Safety Code for the Construction Industry*, c. S-2.1, r.4.
 - .6 Store cylinders far from sources of heat.
 - .7 Do not store cylinders near stairs, exits, corridors or elevators;
 - .8 To prevent the risk of an explosive reaction, do not allow acetylene to come into contact with such metals as silver, mercury, copper and brass alloys containing more than 65% copper.
 - .9 Check electric arc welding equipment to ensure that it has the proper voltage and is grounded.
 - .10 Make sure that the lead wires of the electric welding equipment are not damaged.

- .11 Place the welding equipment on a flat surface protected from the weather.
- .12 Install flame-retardant sheet metal where welding is being done overhead or there is a risk of falling sparks.
- .13 Remove or protect flammable or combustible materials located 15 metres or closer to the welding work.
- .14 Never weld or cut on closed containers.
- .15 Do not cut, weld or carry out open-flame work on a tank, pipe or other container that may contain a flammable or explosive substance or residue unless:
 - a. the container has been cleaned and air samples have been taken, indicating that the work can be done safely, or
 - b. measures have been taken to ensure worker safety.

1.27 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 of the *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.
 - a. description of the body of water;
 - b. description of the work done near this body of water;
 - c. transportation plan on water adapted to the work and to the characteristics of the body of water;
 - d. rescue plan adapted to the work and to the characteristics of the body of water.

Each document listed below must contain at a minimum the information required in section 11 of the *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.

- .4 The Contractor must submit to the Departmental Representative the certificate of training required in article 11.2 of the *Safety Code for the Construction Industry* for the following individuals:
 - a. the person assigned to prepare the documents required in the preceding paragraph; and
 - b. 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 articles 11.4 and 11.5 of the *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 site provided that the distance between any of these workplaces and the vessel is less than 30 m.
- .8 Where the 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 must be installed on the front of the structure every

1.28 TEMPORARY HEATING

- .1 In addition to complying with article 3.11 of the *Safety Code for the Construction Industry*, the Contractor must comply with the requirements set out in the following paragraphs.
- .2 A portable fire extinguisher must be available at all times near the heating equipment, regardless of the type of heating used.
- .3 All equipment must always be used in accordance with the manufacturers' specifications.
- .4 Where applicable, the canvases and tarpaulins used near the heating equipment must be strongly fastened so that they cannot fall onto the equipment, the equipment's piping or any other source of heat.
- .5 Gas cylinders must be installed so as to protect vehicle traffic and other equipment.
- .6 If heating equipment other than electrical is used, the Contractor must install a carbon monoxide detector in the work area, near the equipment and/or workers, for the entire duration of the heating period. If the detector alarm sounds, the Contractor must immediately make the necessary corrections to the heating equipment.
- .7 The Contractor must ensure a minimum of monitoring for the heating equipment outside office hours (evenings and weekends). It must submit a monitoring plan to the Departmental Representative before use of the heating equipment.

1.29 HEALTH AND SAFETY SUBORDINATION AGREEMENT

- .1 See next page for the health and safety subordination agreement, a completed and signed copy of which must be provided to the Departmental Representative.

Project: _____ Address: _____

EXTERNAL CONTRACTOR

I hereby agree to submit to the authority of (name of the Principal Contractor's business) _____, which is the Principal Contractor for the project indicated above, during the entire duration of our work on the construction site. Accordingly, I confirm that I have reviewed the Principal Contractor's prevention program, and I agree to:

- inform my employees of the content of the Principal Contractor's prevention program and ensure that its content are complied with at all times;
- apply the prevention program that is specific to the activities that we carry out under this project;

- inform the Principal Contractor of my actions or dealings on the construction site and obtain the Principal Contractor's agreement before the start of work; and
- follow the health and safety directives provided by the representative of the Principal Contractor on the construction site and, depending on requirements, attend training sessions and health and safety meetings organized by the representative of the Principal Contractor.

Name of representative: _____

Company name: _____

Description of work to be done on the site: _____

Approximate dates of work (start-end): _____

Signature: _____ Date: _____

PRINCIPAL CONTRACTOR

I hereby agree to allow the business (name of external contractor) _____ to perform the work under this project indicated above and, as Principal Contractor, to take the necessary steps to protect the health and safety of workers on the construction site. Should the Contractor repeatedly refuse or fail to comply with my directives, I agree to inform PWGSC's Departmental Representative of this and to provide documentary evidence of my actions or dealings with the Contractor.

Name of representative: _____

Name of the Principal Contractor's business: _____

Signature: _____ Date : _____

Submit a completed and signed copy to PWGSC's Departmental Representative

Partie 1 General

1.1 DEFINITIONS

.1 Definitions

- .1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade environment aesthetically, culturally and/or historically.
- .2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction. Control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.2 REFERENCES

Without limitation, the main applicable acts, regulations, authorizations and guidelines are:

.1 Government of Canada:

- .1 *Canadian Environmental Protection Act, 1999 (CEPA).*
- .2 *Transportation of Dangerous Goods Act, 1992.*
- .3 *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations.*
- .4 *Transportation of Dangerous Goods Regulations.*
- .5 Canadian Council of Ministers of the Environment (CCME) documentation.
- .6 *Federal Sustainable Development Strategy.*
- .7 Any other act, regulation or guideline relevant to the Project.

.2 Government of Quebec:

- .1 *Environment Quality Act (EQA).*
- .2 *Regulation Respecting the Burial of Contaminated Soils.*
- .3 *Regulation Respecting the Landfilling and Incineration of Residual Materials.*
- .4 *Regulation Respecting Hazardous Materials.*
- .5 *Land Protection and Rehabilitation Regulation.*
- .6 *Regulation Respecting Contaminated Soil Storage and Contaminated Soil Transfer Stations.*
- .7 *Transportation of Dangerous Substances Regulation.*
- .8 *Protection Policy for Lakeshores, Riverbanks, Littoral Zones and Floodplains.*
- .9 *Soil Protection and Rehabilitation of Contaminated Sites Policy.*

- .10 *Guide d'intervention – Protection des sols et réhabilitation des terrains contaminés* [Action guide - Soil protection and rehabilitation of contaminated sites] (available in French only)
- .3 Ministère des Transports du Québec:
 - .1 *Ouvrages routiers, Normes, Tome II – Construction routière* [Road works, Standards, Volume II – Road construction] (available in French only).
- .4 Studies and reports will be provided to the Contractor awarded the contract:

Enviroservices, February 2018. “Caractérisation environnementale des sols aux infrastructures maritimes et au chemin d’accès, Institut Maurice-Lamontagne, 850 route de la Mer à Mont-Joli” [Environmental characterization of soils for marine infrastructures and access road, Maurice-Lamontagne Institute, 850 Route de la Mer in Mont-Joli], Submitted to Public Services and Procurement Canada for Fisheries and Oceans Canada, 19 pages and appendices.

1.3 SUBMITTALS FOR APPROVAL/INFORMATION

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Before construction activities commence or the materials and equipment are delivered to the work site, submit an Environmental Protection Plan to the Departmental Representative for review and approval.
- .3 Environmental Protection Plan must include comprehensive overview of known or potential environmental issues to be addressed during construction.
- .4 The actions set out in the environmental protection plan shall be described at a level of detail commensurate with the environmental issues and the construction tasks to be performed.
- .5 The Environmental Protection Plan must include:
 - .1 Names of the persons responsible for ensuring compliance with the 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 An erosion and sediment control plan that identifies the measures that will be implemented, including monitoring of the work and reporting, to ensure compliance with federal, provincial, and municipal laws and regulations.
 - .6 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use. Plan to include measures for marking limits of use areas including methods for protection of features to be preserved within authorized work areas.
 - .7 Spill Control Plan: including procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
 - .8 Traffic Control Plans including measures to minimize amount of material transported onto paved public roads by vehicles or runoff.

- .1 These plans must include measures to reduce the transporting of materials onto public roads by vehicles or runoff.
- .9 Non-Hazardous Solid Waste Disposal Plan identifying methods and locations for solid waste disposal including clearing debris.
- .10 Air Pollution Control Plan detailing provisions to assure that dust, debris, materials, and trash, do not become air borne and travel off project site.
- .11 Contaminant Prevention Plan that: identifies potentially hazardous substances to be used on job site; identifies intended actions to prevent introduction of such materials into air, water, or ground; and details provisions for compliance with federal, provincial, and municipal laws and regulations for storage and handling of these materials.
- .12 A Waste Water Management Plan that identifies the methods and procedures to be implemented for management and/or discharge of waste water that results directly from construction activities, such as concrete curing water, washing and clean-up water, water table drawdown, disinfection water, hydrostatic test water, and water used in flushing of lines.

1.4 FIRES

- .1 Fires and burning of rubbish on site are prohibited.

1.5 WORK ADJACENT TO WATERWAYS

- .1 Perform vehicle maintenance, refuelling, oil changes and various maintenance operations at least 30 m from the shore.
- .2 Store fuel and all potential contaminants at least 30 m from the shore.
- .3 Waterways must be kept free of excavated fill, waste material and debris. Any debris accidentally introduced into aquatic environments must be recovered as quickly as possible.

1.6 MATERIAL TRANSPORTATION

- .1 Transportation of materials on public roadways leading to the construction site may begin at 6 a.m. until 6 p.m., from Monday to Friday inclusively, unless otherwise indicated by the competent authorities. Transport will be prohibited on Saturdays, Sundays and statutory holidays.
- .2 The Contractor must ensure that the trucks used are in good working order. Any truck and other transportation vehicle that is deemed by the Departmental Representative to have an above-normal noise level must not be allowed to transport material and must be repaired or modified to have an acceptable noise level.
- .3 The Contractor shall use appropriate signage and cooperate with the municipality, the Departmental Representative and other competent authorities in order to minimize the impact of the material transportation on those living near the route taken by the trucks and the job site.
- .4 Use tarpaulin covered trucks when transporting aggregate material.

1.7 CONCRETE CONSTRUCTION

- . 1 When performing concreting work, ensure that no concrete or particles reach the aquatic environment.
- .2 Do not directly or indirectly discharge water that has come into contact with fresh concrete or partly cured cement into the aquatic environment.
- . 3 Concrete trucks must not be washed on the wharf. No discharge of concrete into the natural environment will be permitted.

1.8 PREVENTION OF CONTAMINATION

- .1 Hazardous materials and petroleum products:
 - .1 Take the necessary measures to prevent potentially hazardous substances from being suspended in the air or entering the soil, groundwater or surface water.
 - .2 Take the necessary measures to ensure that potentially hazardous substances are stored and handled in accordance with the applicable federal, provincial and municipal regulations and by-laws.
 - .3 Take the necessary measures to properly manage contaminated or potentially contaminated soil (stains, odours, presence of debris) during construction activities.
 - .4 Insofar as possible, excavated contaminated soil should be transported immediately to an authorized site for disposal. If temporary storage is unavoidable, lay down an impermeable surface with a retention capacity and cover the stored materials with impermeable tarps to protect them from bad weather.
 - .5 Take the necessary measures to prevent chemical leaks and spills.
 - .6 Place cans or containers containing hydrocarbons and other hazardous substances in a spill tray or between impermeable berms with a retention capacity of 110 % of the maximum quantity that may be stored.
 - .7 Take appropriate measures for the storage and containment of hazardous substances (fuels and solvents).
 - .8 Do not store petroleum products, or any other hazardous substance, within 30 m from the shore.
 - .9 Do not handle petroleum products, or any other hazardous substance, within 30 m from the shore, with the exception of refuelling by tank truck or floating equipment or land-based equipment.
 - .10 All handling of fuel, oil, other petroleum products or contaminants, including transfilling, must be carried out under constant supervision, in order to prevent accidental spills.
 - .11 At the location of each piece of work equipment, the Contractor must have impermeable barrels to receive materials contaminated by hydrocarbons or other potentially hazardous substances. The barrels must be clearly marked and comply with the applicable regulations.
- .2 Equipment:

- .1 All equipment and machinery must be free of leaks and be in excellent operating condition. An inspection report certifying that the equipment is in good condition must be submitted before this equipment is mobilized to the job site. Any equipment with one or more leaks must be taken out of service without delay. The leak must be contained as quickly as possible and the equipment must be repaired to eliminate the leak as quickly as possible. Should the Contractor fail to comply with this requirement, the Departmental Representative can require the Contractor to remove the equipment concerned from the job site.
- .2 Job site equipment and trucks must be maintained in good operating condition. Check the equipment daily for the presence of any contaminant leaks, which must be repaired immediately.
- .3 Before commencement of the work, designate an area for machinery maintenance and storage and handling of hazardous materials. This site must be located at least 30 m from any waterways.
- .4 The maintenance of vehicles or machinery, the installation of temporary latrines, and any other storage or other activities that could involve the use of potentially hazardous substances or contaminants is not permitted within 30 m of a water body.
- .5 Move machinery away from the waterway as soon as it is no longer being used.
- .6 Carry out the maintenance of any mechanical equipment on an impermeable surface.
- .3 Contaminated soil:
 - .1 If any soil exhibiting signs of contamination (stains, odours, presence of debris, etc.), other than the contaminated soil described in the specifications, is encountered during the excavation work, the requirements set out in section 01 74 25 – Solid Waste and Dry Materials must be followed.
- .4 Ensure that any necessary structures and measures (geomembrane/concrete/asphalt, collection, containment and treatment system for runoff and leaching water, etc.) are put in place to ensure the impermeability of the contaminated materials (debris, sediments, hazardous waste, contaminated soil, fouled water, etc.) storage and handling area, in order to prevent the migration of contaminants to the soil, underlying water table and surface water.

1.9 POLLUTION CONTROL

- .1 Temporary storage of material will be tolerated only for reclaim level materials (concentration in the range of criteria A at the job site). Other material must be transported off-site as it is excavated. Likewise, backfill materials must be brought in as they are incorporated into the structure.
- .2 Maintain temporary erosion and pollution control features installed under this contract.
- .3 Control emissions from equipment and plant to local authorities emission requirements.
- .4 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area, by providing temporary enclosures.
- .5 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

- .6 Greenhouse gases and other contaminants:
 - .1 Reduce vehicle movements within and outside the site in order to minimize fuel consumption.
 - .2 The Contractor must not allow job site equipment and trucks to idle unnecessarily when they are not being used.
 - .3 Minimize, insofar as possible, the use of generators that run on fossil fuels.
 - .4 Use machinery, equipment and vehicles in good operating condition in order to minimize the emission of atmospheric contaminants.
 - .5 Adapt operations so as to reduce emissions of atmospheric contaminants by combining activities that use machinery, by adopting an idle reduction plan and by using automatic engine shut-offs during extended idling.
 - .6 Minimize the use of fuel-intensive equipment and use cleaner fuels, such as low-sulphur diesel.
 - .7 If necessary, use low-VOC products.
- .7 Dust:
 - .1 During transport, materials containing fines must be covered with securely attached tarps.
 - .2 If a dust-control agent must be applied, only water may be used.
 - .3 Visually monitor dust emissions and take action to control them if necessary. The Departmental Representative will require mitigation measures such as covering and wetting down materials (excavated material or other) if particles are visibly being carried more than 5 m from the point of origin.
 - .4 Cover the piles of dried excavated material and fill.
 - .5 The Departmental Representative can interrupt the work at any time if he/she considers that the actions taken by the Contractor to reduce dust and particulate matter are inadequate.
 - .6 During the passage of vehicles, the Contractor must take the necessary measures to ensure that dust is not perceptible more than 30 cm above the ground surface.

The Contractor is required to comply with ambient air quality standards at the boundaries of the sites used, as stipulated by regulation.

1.10 NOTICE OF NON-COMPLIANCE

- .1 The Departmental Representative will issue a written notice of non-compliance to the Contractor following any observed instances of non-compliance with a federal, provincial or municipal act, regulation, by-law or permit, or any other element of the environmental protection plan implemented by the Contractor.
- .2 After receipt of such notice, the Contractor must inform Departmental Representative of proposed corrective action and take such action with approval by Departmental Representative.
 - .1 The Contractor must not take action until receipt of written approval by Departmental Representative.

- .3 The Departmental Representative will issue a stop order of work until satisfactory corrective action has been taken.
- .4 No time extensions will be granted or equitable adjustments allowed to the Contractor for such suspensions.

1.11 GENERAL MITIGATION EFFORTS

- .1 The Contractor must take into consideration when performing the Work the following general mitigation measures to reduce environmental impacts and the consequences in case of failure:
 - .1 Keep the use of engine brakes to a minimum when transporting equipment and materials.
 - .2 Do not let the engines of machinery idle unnecessarily while not in use.
 - .3 Respect the speed limits set for the site in order to keep dust down.
 - .4 Machinery in contact with water must use biodegradable vegetable oil specially designed for that type of equipment.
 - .5 Make sure the machinery being used is in good operating condition (regular maintenance) and that the sound level complies with current standards.
 - .6 Check machinery and equipment daily for contaminant leaks that, if found, must immediately be repaired or excluded from the construction area.
 - .7 General maintenance of machinery and equipment as well as all handling of fuel, oil, other petroleum products or contaminants, including transfilling, must be carried out under constant supervision to prevent accidental spills. Such operations must be carried out in the areas identified for that purpose, where there is no risk of contaminating an aquatic environment, and located 30 m from the shore.
 - .8 Equipment must not be washed in river water.
 - .9 Water that has been in contact with fresh concrete, uncured cement or partly cured cement (water used to wash concrete trucks and other equipment) must not be discharged into the aquatic environment.
 - .10 Limit heavy machinery traffic and storage of materials to those traffic, work and storage areas defined in advance.
 - .11 Carry out any work likely to generate dust while winds are calm.
 - .12 Discharge of demolition materials (concrete, aggregate materials, steel, pavement, etc.) into the aquatic environment is prohibited. All discharged material, whatever its size and nature, must immediately be recovered.
 - .13 The Contractor must keep a spill response kit at the construction site so that any spill can be confined.
 - .14 If soils showing signs of contamination (odour, iridescence, etc.) are excavated, these must be managed in accordance with current standards based on their analysis results.
 - .15 Employees must have taken spill response training.
 - .16 In the event of a spill in an aquatic environment, the contaminated water must be confined and recovered by a specialized firm and sent to a treatment centre

approved by the Ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques du Québec (MDDELCC).

- .17 The Contractor must also ensure proper coordination with the staff of MLI for site use.
- .18 In the event of a spill, the contaminated soils must be piled on leakproof tarpaulins and be covered with leakproof tarpaulins or placed in leakproof containers. Contaminated soils must be managed in accordance with current standards based on soil analysis results.
- .19 Any hazardous materials spill at the site must be reported to the National Environmental Emergencies Centre of Environment and Climate Change Canada at 1-866-283-2333 and the MDDELCC at 1-866-694-5454 as well as the Canadian Coast Guard (1-800-363-4735).

1.12 SOIL CHARACTERIZATION

- .1 Soils must be managed in accordance with their contamination level, as per the MDDELCC's Interim Management Grid for Excavated Contaminated Soils:
 - 1. Contaminated soil, below "A";
 - 2. Contaminated soil, class "A-B";
 - 3. Contaminated soil, class "B-C";
 - 4. Contaminated soil, exceeding "C".

1.13 CHARACTERISTIC FOR WHARF APPROACH

- .1 Summary of characterization
 - .1 Contamination level: Concentrations in the range of the AB criteria must be reported for nickel (Ni) at a depth of 1 m below the travelled surface (see FCA-09-17 sample results in appendix).

1.14 CHARACTERISTIC FOR SPUR WHARF

- .1 Summary of characterization: The analysis was subdivided by sector in order to better assess the location of contaminants by contamination level.
 - .1 Sector 1 (start of spur wharf / chaining 0+00 to chaining 0+11.0): The soil is of good quality (see the FQE-09-17 sample results in appendix).
 - .2 Sector 2 (chaining 0+11.0 to 0+20.5): Concentrations in the range of the C-RBCS criteria must be reported for petroleum hydrocarbons C₁₀ to C₅₀ at a depth of 0.660 metres below the travelled surface (see the FQE-03-17 sample results in appendix).
 - .3 Sector 3 (chaining 0+20.5 to 0+33.5): Concentrations in the range of the BC criteria must be reported for cadmium and the AB criteria for zinc and petroleum hydrocarbons, according to the depth being excavated (see the FQE-03-17 and FQE-08-17 sample results in appendix).
 - .4 Sector 4 (chaining 0+33.5 to 0+47.5): The soil is of good quality (see the FQE-02-17 sample results in appendix).

- .5 Sector 5 (chaining 0+47.5 to 0+59.0): Concentrations in the range of the AB criteria must be reported for nickel for a layer 500 mm thick (see the FQE-06-17 sample results in appendix).
- .6 Sector 6 (chaining 0+59 until the end): Concentrations in the range of the C-RBCS, BC and AB criteria must be reported for petroleum hydrocarbons for the entire depth of the excavation (see the FQE-01-17 sample results in appendix).

1.15 SPECIFIC MITIGATION EFFORTS

- .1 The contamination level IV soils located in Sector 2 and Sector 6 are considered in the C-RBCS and B-C ranges.
 - .1 Further to the analysis results for the aggregate material samples, the B-C concentrations obtained respect the criterion applicable to commercial and industrial use (provided that use does not increase contamination), namely criterion C of the MDDELCC Soil Protection and Rehabilitation of Contaminated Sites Policy. Soils with a contamination level greater than C must be disposed of at an authorized treatment location or in a safe landfill site authorized to receive the soils.
- .2 The contamination level for soils located near the wharf approach, Sector 3 and Sector 5 are considered to be in the A-B range for materials found at a specific depth below the travelled surface.
 - .1 Further to the analysis results for the aggregate material samples, the concentrations obtained respect the criterion applicable for residential use in the process of restoration (provided that use does not increase contamination), that is, criterion B of the MDDELCC Soil Protection and Rehabilitation of Contaminated Sites Policy.
- .3 For underwater work, the Contractor must make sure to minimize the resuspension of sediment in the water.
 - .1 If the Departmental Representative deems that there has been a significant resuspension of sediments, the Representative reserves the right to temporarily halt the activity and require that the Contractor modify its work method.
 - .2 Install a silt curtain around the construction areas.
- .4 The asphalt, concrete patching, concrete slab and aggregate materials that currently constitute the surface layer of the commercial wharf must be excavated in three separate operations so that the various materials can be separated and sorted by management method.
 - .1 The asphalt layer must be managed in accordance with the regulations of the MDDELCC and comply with guidelines on managing the concrete, brick and asphalt from construction and demolition work published by the MDDELCC.
 - .1 The Contractor must prioritize asphalt recycling, reclamation and reuse as its management method.
 - .2 The concrete slab and all of the concrete demolished during the Work must be managed in accordance with the regulations of the MDDELCC and comply with guidelines on managing the concrete, brick and asphalt from construction and demolition work published by the MDDELCC.

- .1 The reinforcing steel, mesh and various steel parts must be removed from the concrete.
- .2 Recycling the concrete into aggregates must be prioritized as the management method.
- .3 The Contractor must prioritize steel recycling as its management method.
- .3 The aggregate material must be disposed of off-site in accordance with MDDELCC regulations, as described in paragraph 1.15.

1.16 MATERIALS FOR OFF-SITE RECOVERY

- .1 The Contractor remains solely responsible for deciding which materials can be recovered. Certified laboratory analyses must be provided to the Departmental Representative.
- .2 Dry materials from the demolition that can be recovered may be removed from the job site provided that the Contractor:
 - .1 provides a written undertaking that the operator of the site to which the materials that, in the Contractor's judgement, are recoverable will be sent, and the owner of this site, if the operator is not the owner, shall indemnify and hold harmless Her Majesty in Right of Canada from and against any and all claims, demands, losses, costs, damages, actions, suits or proceedings from any anyone arising out of, related to, caused by or attributable to the depositing of these materials at this site by the Contractor, its employees, agents or subcontractors, or the subsequent use of these materials;
 - .2 provides a document duly signed by the operator of the site, and by the owner of this site if the operator is not the owner, authorizing the Contractor to deposit on this site demolition materials that, in the Contractor's opinion, are recoverable;
 - .3 provides a document duly signed by the operator of the site, and by the owner of this site if the operator is not the owner, indemnifying and holding harmless Her Majesty in Right of Canada against any and all claims that may result from the deposit on this site of demolition materials that, in the Contractor's judgement, are recoverable, and the subsequent use of these materials.

This plan must:

- .1 be completed in duplicate if the site operator is not also the site owner (i.e., one copy by the site operator and one copy by the site owner);
- .2 indicate the cadastral references and the names of the owners of the lots making up the site where the reclaimable materials will be deposited;
- .3 contain the following paragraph:

“ ... (name of the company operating the site or, if applicable, the name of the owner of this site) shall indemnify and hold harmless Her Majesty in Right of Canada against any and all claims, losses, costs, damages, actions, suits or proceedings from anyone arising out of, related to, caused by or attributable to the depositing by..... (name of the Contractor), its employees, agents or subcontractors, on lot(s) bearing number(s) ... in the cadastre of....., of

materials from the demolition of..... (name of the structure to be demolished) which, in the judgement of ... (name of the Contractor), are recoverable, or the subsequent use of these materials"; and

- .4 supply a document duly issued by the RCM or municipality where the site is located authorizing the site operator and the site owner, where this is another person, to use the site for the deposit of reclaimable dredging materials; and
- .5 obtain prior written approval from the Departmental Representative.

Partie 2 Product

2.1 NOT APPLICABLE

- .1 Not applicable.

Partie 3 Execution

3.1 CLEAN-UP

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

END OF SECTION

Partie 1 General

1.1 INSPECTIONS

- .1 The Contractor must present its quality control plan for all steps of the project. It must monitor the quality management plan and adapt it as necessary.
- .2 The Departmental Representative must have access to the structures at all times during the Contractor's work.
 - .1 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 will 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 re-inspection.

1.3 ACCESS TO WORK SITE

- .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 may be 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.

Partie 2 Product

2.1 NOT APPLICABLE

- .1 Not applicable.

Partie 3 Execution

3.1 NOT APPLICABLE

- .1 Not applicable.

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QUALITY CONTROL
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END OF SECTION

Partie 1 General

1.1 WATER SUPPLY

- .1 The Departmental Representative will not provide a continuous drinking water supply.
- .2 The Contractor must bear all costs associated with the consumption of drinking water.

1.2 TEMPORARY POWER AND LIGHT

- .1 The Departmental Representative will not provide temporary power during construction for temporary lighting and operating of power tools.
- .2 Arrange for connection of the work site trailer and various equipment with the appropriate utilities and pay costs for installation, maintenance and removal of such connections.

1.3 SANITARY FACILITIES

- .1 The Departmental Representative will not provide access to sanitary facilities (toilets, faucets, urinals, etc.).
- .2 The Contractor must make the necessary arrangements to provide its own sanitary facilities and bear all installation, maintenance and cleaning costs during construction under the *Safety Code for the Construction Industry* (S-2.1, r.6.), subsection 3.2.7.

1.4 TELECOMMUNICATIONS

- .1 The Contractor must provide temporary telecommunications installations, in particular smart phones with Internet access and the necessary equipment, for its own use and that of the Departmental Representative, and must bear the costs of all such services.

1.5 FIRE PROTECTION

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

Partie 2 Product

2.1 NOT APPLICABLE

- .1 Not applicable.

Partie 3 Execution

3.1 NOT APPLICABLE

- .1 Not applicable.

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TEMPORARY UTILITIES
Page 2

END OF SECTION

Partie 1 General

1.1 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

- .1 Protect surrounding private and public property from damage during performance of Work.
- .2 The Contractor will be held responsible for any damage to surrounding private and public property during construction. The Contractor shall repair damaged property, at its own expense and as such damage arises, to the satisfaction of the appropriate authority before completion of the Work.

1.2 INFORMATION AND WARNING DEVICES

- .1 Provide and maintain signs and other devices required to indicate construction activities or other temporary and unusual conditions resulting from project work which may require road user response.
- .2 Meet with Departmental Representative prior to commencement of Work to prepare list of signs and other devices required for project. If the situation on site changes, revise list to approval of Departmental Representative and local municipality.
- .3 Maintain all traffic control devices as follows:
 - .1 Check devices daily for legibility, damage, suitability and location. Clean, repair or replace to ensure clarity and reflectance.
 - .2 Remove or cover signs that do not apply to conditions existing from day to day.

1.3 PROTECTION AND MAINTENANCE OF TRAFFIC

- .1 Maintain and protect traffic flow on all roads affected throughout the duration of the work, unless otherwise specified by the Departmental Representative.
- .2 Protect the travelling public against damage to person and property.
- .3 The automotive equipment used by the Contractor to carry materials/supplies on and off site must hinder traffic flow as little as possible.
- .4 Make sure that existing roads, and load limits authorized on these roads, are sufficient. The Contractor is responsible for repairing roads damaged as a result of construction work.
- .5 Provide snow removal during period of Work, where necessary.

1.4 CONSTRUCTION SITE FENCING

- .1 Consisting of sturdy, safe construction site fencing that is wind resistant and equipped with reflective tape, or any other fencing deemed sufficiently safe by the Departmental Representative.
- .2 A security perimeter concentrated around the Contractor's work area must be established and must allow for user traffic to the boat launch while ensuring the safety of workers inside the security perimeter.

- .3 Trenches and/or excavations that represent a fall risk must be protected by means of fencing or another means deemed satisfactory by the Departmental Representative.

1.5 CONSTRUCTION SITE SIGNAGE

- .1 When the security perimeter consisting of construction site fencing must include openings for passage of heavy vehicles, install T-RV-7 traffic cones or the equivalent, and move these as necessary.
- .2 Construction site signage must be installed when the Contractor mobilizes at the site. The signage must be in place, visible and operational before construction work commences.
- .3 The Contractor will not be authorized to begin construction work until construction site signage is in place.

1.6 CONTRACTOR FIELD OFFICE AND CONSTRUCTION SITE TRAILERS

- .1 The Contractor must set up a field office for use by its staff. Provide office heated to 22°C, lighted 750 lx and ventilated, of sufficient size to accommodate site meetings and furnished with drawing laydown table.
- .2 Provide a sufficient number of private washroom facilities for employees and the supervisor adjacent to office complete with flush or chemical type toilet, sink and mirror and maintain supply of paper towels and toilet paper
- .3 Provide marked and fully stocked first-aid case in a readily available location.
- .4 Subcontractors may provide their own offices as necessary. Direct location of these offices.

1.7 OFFICE OF THE SITE SUPERVISOR

- .1 The Contractor must set up an office specifically for the site supervisor. The office must be physically separate and independent from the Contractor's construction site trailer.
- .2 The office of the site supervisor must measure, inside, at least 3.6 m in length by 3 m in width by 2.4 m in height, and must include a floor located 0.3 m off the ground, as well as two windows that can be 50% opened as well as a locking door.
- .3 Properly insulate building and provide heating system to maintain 22°C inside temperature at -20°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 The office must be equipped with an electric lighting system that provides 750 lux lighting; the fixtures used must be commercial ones.
- .6 Furnish the office with a table measuring 1 m x 2 m, two chairs, a single-drawer filing cabinet, a drawing stand and a clothing rack, with shelf.
- .7 Keep the premises clean and clean up the trailer every day.

1.8 EQUIPMENT TO SUPPLY TO SITE SUPERVISOR

- . 1 Provide marked and fully stocked first-aid case in a readily available location inside the office.

- .2 Provide a smart cell phone with Internet access, protector and recharging accessories.

1.9 ON-SITE STORAGE/ALLOWABLE LOADS

- .1 The Contractor must ensure that the work is carried out within the perimeter indicated in the drawings. Do not unreasonably encumber premises with equipment or materials.
- .2 Do not load or permit to load any part of Work with weight or force that will endanger Work.

1.10 CLEAN-UP

- .1 Remove all construction debris, waste and packing materials from the work site daily.
- .2 Remove dust and mud from paved or surfaced roads.
- .3 Store materials resulting from demolition activities that are salvageable.
- .4 Do not stack stored new or salvaged material in construction facilities.

Partie 2 Product

2.1 NOT APPLICABLE

- .1 Not applicable.

Partie 3 Execution

3.1 NOT APPLICABLE

- .1 Not applicable.

END OF SECTION

Partie 1 General

1.1 REFERENCES

- .1 Within text of each specifications section, reference may be made to reference standards.
- .2 Conform to reference standards, in whole or in part as specifically requested in specifications.
- .3 If there is question as to whether products or systems are in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.
- .4 Cost for such testing will be borne by Departmental Representative in event of conformance with Contract Documents or by Contractor in event of non-conformance.

1.2 QUALITY

- .1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .2 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of work.
- .3 Defective products, whenever identified prior to completion of the work, will be rejected, regardless of the conclusions of previous inspections. Inspection does not relieve the Contractor of its responsibility, but is simply a precaution against oversight or error. The Contractor shall remove and replace defective products at its own expense and be responsible for the resulting delays and expenses.
- .4 Should disputes arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.
- .5 Unless otherwise indicated in the specifications, promote uniformity by ensuring that the materials or articles of a given type are from the same manufacturer.
- .6 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.3 AVAILABILITY

- .1 Immediately upon acceptance of the bid, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Departmental Representative of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.
- .2 In event of failure to notify Departmental Representative at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Departmental

Representative reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.4 STORAGE, HANDLING AND PROTECTION

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in enclosures.
- .4 Store cementitious products clear of earth or concrete floors, and away from walls.
- .5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
- .6 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.
- .7 Touch-up damaged factory-finished surfaces to Department Representative's satisfaction. Use touch-up materials to match original.

1.5 TRANSPORTATION

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

1.6 MANUFACTURER'S INSTRUCTIONS

- .1 Unless otherwise indicated in the specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosure provided with products. Obtain written instructions directly from manufacturers.
- .2 Notify Departmental Representative in writing, of conflicts between specifications and manufacturer's instructions, so that Departmental Representative will establish course of action.
- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Departmental Representative to require removal and re-installation at no increase in Contract Price or Contract Time.

1.7 QUALITY OF WORK

- .1 The work shall be of the highest possible quality, executed by workers experienced and skilled in their respective trades. Immediately notify Departmental Representative if required Work is such as to make it impractical to produce required results.
- .2 Do not employ anyone unskilled in his or her required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.
- .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative, whose decision is final.

1.8 COORDINATION

- .1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.

1.9 REMEDIAL WORK

- .1 Perform remedial work required to repair or replace parts or portions of the work identified as defective or unacceptable. Co-ordinate adjacent affected work as required.
- .2 The remedial work must be done by specialists familiar with the materials used. This work must be done in such a way that no part of the work is damaged or put at risk of being damaged.

1.10 EXISTING UTILITIES

- .1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work.

Partie 2 Product

2.1 NOT APPLICABLE

- .1 Not applicable.

Partie 3 Execution

3.1 NOT APPLICABLE

- .1 Not applicable.

END OF SECTION

Partie 1 General

1.1 SITE CLEANLINESS

- .1 Maintain site in tidy condition, free from accumulation of waste products and debris. Clear snow and ice from accesses.
- .2 Remove waste materials and debris from the site at daily regularly scheduled times or dispose of as directed by the Departmental Representative. Do not burn waste materials on site.
- .3 Make the necessary arrangements with and obtain permits from the authorities of competent jurisdiction for the disposal of debris and waste materials from site.
- .4 Provide on-site containers for collection of waste materials and debris. Provide and use marked separate bins for recycling.
- .5 Clean all site accesses used by the Contractor as work progresses, to the satisfaction of the Departmental Representative.

1.2 WEEPHOLES

- .1 Make sure weepholes on the spur wharf are free of debris that may reduce their capacity to evacuate surface water.
- .2 When cleaning weepholes, do not dispose of debris in the aquatic environment.
- .3 Recover debris and dispose of it off-site.
- .4 Immediately notify the Departmental Representative of any damage to existing weepholes.

1.3 FINAL CLEANING

- .1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Upon final completion of the Work, remove the security perimeter, the construction site trailer, the equipment and materials, the signage, as well as any debris and waste.
- .3 The surface of the wharf, the accesses, the Work areas and additional storage areas, and all other premises used by the Contractor must be cleaned and returned to their original condition, to the satisfaction of the Departmental Representative.

Partie 2 Product

2.1 NOT APPLICABLE

- .1 Not applicable.

Partie 3 Execution

3.1 NOT APPLICABLE

.1 Not applicable.

END OF SECTION

Partie 1 General

1.1 WASTE MANAGEMENT GOALS

- .1 Before Work commences, meet with the Departmental Representative in order to review PWGSC objectives for waste management and the waste reduction plan proposed by the Contractor for construction, renovation and demolition waste generated by the project.
- .2 PWGSC's waste management goal is 75 percent of total construction/demolition waste to be diverted from landfill sites. Before Work completion, provide Departmental Representative with documentation certifying that waste management, recycling, reuse of recyclable and reusable materials have been extensively practised.
- .3 Protect environment and prevent environmental pollution damage.

1.2 WASTE REDUCTION WORKPLAN (WRW)

- .1 Prepare and submit WRW at least 10 days prior to Work commencement.
- .2 The WRW determines the strategies for optimizing reclamation by reducing, reusing and recycling materials and for complying with the applicable regulations, in accordance with the data drawn from the WA.
- .3 The WRW must include but not be limited to:
 - .1 Applicable regulations.
 - .2 Exact waste reduction goals, obstacles and strategies to achieve these.
 - .3 Destination of waste materials listed.
 - .4 Deconstruction/dismantlement techniques and sequencing.
 - .5 Methods to collect, sort and reduce the waste generated.
 - .6 Location of waste bins on-site.
 - .7 Safety measures for waste in stockpiles and on-site bins.
 - .8 Protective measures for personnel and subcontractors.
 - .9 Clear labelling of storage areas.
 - .10 Training plan for Contractor and subcontractors.
 - .11 Details on materials handling and removal.
 - .12 Recycler's requirements.
 - .13 Quantities for waste materials to be salvaged for reuse or recycling and materials sent to landfill.
 - .14 Requirements for supervision of waste management activities the job site.
- .4 Structure WRW to prioritize actions and follow 3R hierarchy, with Reduction as first priority, followed by Reuse, then Recycle.
- .5 Post WRW or summary where workers at site are able to review content.

1.3 WASTE PROCESSING SITES

- .1 The Contractor is responsible for finding waste reclamation resources and service suppliers. The recovered waste materials must be transported to approved and/or authorized recycling facilities or to recyclers.

1.4 MATERIALS STORAGE, HANDLING AND PROTECTION

- .1 Protect, stockpile, store and catalogue salvaged items.
- .2 Separate non-salvageable materials from salvageable items. Transport and deliver non-salvageable items to licensed disposal facility.
- .3 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated processing facilities.
 - .1 Excavate the plant mix, concrete and aggregate material in three separate steps so that the materials can be source separated.
 - .2 Remove co-mingled materials to off-site processing facility for separation.
 - .3 Obtain waybills, receipts and/or scale tickets for separated materials removed from site.

1.5 SCHEDULING OF WORK

- .1 Co-ordinate waste management with other activities to ensure timely and orderly progress of Work.

Partie 2 Product

2.1 NATURE OF MATERIALS

- .1 Construction and demolition waste include, but are not limited to:
 - .1 Asphalt, electrical lines, water main liner, reinforced concrete, aggregate sub-base, aggregate base, pit run, pieces of wood, wire and steel, as well as all other materials from construction.
 - .2 Excavation soils containing contamination levels that meet the range of criteria A, AB, B, BC and > C at different elevations and locations.
 - .3 Uncontaminated dry materials that are not reused/backfilled or recycled must be disposed of at sites authorized for that purpose by the Quebec Ministère du Développement durable, de l'Environnement de la Lutte contre les changements climatiques (MDDELCC). Comply with the requirements of the *Environment Quality Act* (R.S.Q. c.Q-2). Upon request, MDDELCC can provide information on sites in operation that can take in the type of waste to be disposed of.

Partie 3 Execution

3.1 GENERAL

- .1 Do Work in compliance with WRW.
- .2 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.

- .3 On-site sale of salvaged materials for reuse is prohibited.

3.2 CLEAN-UP

- .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 reuse and recycling.
- .1 Remove recycling containers and bins from site and dispose of materials at appropriate facilities.
- .2 Source separate materials to be reused or recycled and place in specified sort areas.

3.3 WASTE REDUCTION WORKPLAN (WRW)

- .1 As Work progresses, the Contractor must fill out the table indicating the type of waste encountered, the method of disposal, the quantities, their destination and all other relevant information. The WRW must be submitted to the Departmental Representative once the Work is completed. The table below is provided as a guideline only.

1) Material Category	2) Person(s) Responsible	3) Total Quantity of Waste (units)	4) Reused Amount (units) Projected	Actual Quantity	5) Recycled Amount (unit) Projected	Actual Quantity	6) Material(s) Destination
Hazardous Materials							
Wood							
Misc. Packaging							
Cardboard and Paper							
Concrete							
Reinforcing and Other Steel							
Aggregate Materials							
Plant mix							
Plastics							
Electrical Cables							

3.4 3.3 CHIEF RESPONSIBILITY FOR THE ENVIRONMENT IN THE FEDERAL AND PROVINCIAL GOVERNMENTS

.1 Government Chief Responsibility for the Environment

Province	Address	General Enquires	Fax
Quebec	Information Centre Marie-Guyart Building, 29th Floor 675 René Lévesque Boulevard East Quebec City, Quebec G1R 5V7	418,521-3830 1-800-561-1616	418-646-5974
St-Anne-Des-Monts	124 1st Avenue West Sainte-Anne-des-Monts, Quebec G4V 1C5	418-763-3301	418-763-7810
Rimouski	212 Belzile Avenue Rimouski, Quebec G5L 3C3	418-727-3511	418-727-3849

END OF SECTION

Partie 1 General

1.1 CONTENTS OF SECTION

- .1 The contents of this section concern only the following activities:
 - .1 Demolition and removal of the remaining layer of asphalt on the surface layer of the spur wharf and the asphalt debris on the main wharf.

1.2 RELATED SECTIONS

- .1 Section *02 41 16.05 – Concrete Demolition* concerns the Work for the concrete demolition required to make repairs to the walls of the spur wharf.
- .2 Section *31 23 33.01 – Excavation, Trenching and Backfilling* concerns the Work to excavate the aggregate material currently in place and to place a new granular subbase.

1.3 SUBMITTALS FOR APPROVAL AND INFORMATION

- .1 Submit documents and samples in accordance with Section 01 33 00 - Submittal Procedures and Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 The Contractor must ensure compliance with all requirements for the transmission of documents, samples and reports.
- .3 Provide copies of weigh slips, bills of lading, receipts and certificates issued by landfill sites and authorized reuse and recycling centres for all materials removed from the construction site.
- .4 Obtain written authorization from the Departmental Representative before sending materials off-site.

1.4 EXISTING CONDITIONS

- .1 "Existing conditions" means the condition of the structures to be demolished on the day of bid acceptance.
- .2 The surface layer of the wharf is significantly degraded. The surface presents numerous defects (potholes, cracks, subsidence, missing asphalt, etc.).

1.5 DEMOLITION METHOD

- .1 The Contractor must obtain the opinions of its own experts regarding the methods, equipment, materials and techniques to be used for excavating and demolishing the wharf's surface layer.
 - .1 The demolition method must be clearly explained to the Departmental Representative at the kickoff meeting.
 - .2 The Contractor must use a method, equipment, materials and techniques for selective demolition of the wharf's surface layer so that the construction debris generated can be sorted.

- .3 The layer of asphalt must be excavated separately from the granular subbase so that it can be disposed of off-site at an authorized location.

1.6 MANAGEMENT OF DEMOLITION DEBRIS

- .1 Pursuant to Section 01 35 43 – Environmental Protection, the asphalt must be managed and disposed of off-site at an authorized location.

Partie 2 Product

2.1 MACHINERY AND EQUIPMENT

- .1 Heavy machinery:
 - .1 Vehicles must comply with the requirements of the *On-Road Vehicle and Engine Emission Regulations*, SOR/2003-2, under the *Canadian Environmental Protection Act*.
 - .2 Leave machinery running only while in use, except where extreme temperatures prohibit shutting machinery down.
- .2 Equipment:
 - .1 Use appropriate equipment to make a saw mark in the areas indicated in the drawing.
 - .2 Use cold milling, levelling or grinding equipment with automatic grade controls capable of operating from stringline, or any other relevant equipment and machinery to excavate the layer of asphalt on the wharf's surface layer.

Partie 3 Execution

3.1 PREPARATION

- .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust, according to requirements of authorities having jurisdiction, that comply with EPA 832/R-92-005 or requirements of authorities having jurisdiction, whichever is more stringent.
- .2 Before commencing removal Work, inspect the premises and verify the area, thickness and boundaries of the asphalt to be removed with the Departmental Representative.
- .3 Protect the concrete pavement to remain in place, in the sector where the spur wharf begins and other structures from deterioration. If these elements are damaged, immediately repair or replace them at no expense and to the satisfaction of the Departmental Representative.

3.2 ASPHALT DEMOLITION

- .1 Avoid mixing the removed asphalt layer with the underlying concrete or gravel or with any other material.
- .2 Use removal and transportation equipment and methods that neither displace nor damage the underlying layers.

- .3 Do not damage the existing wheel guards or any portion of the structure that must remain in place.
- .4 Take all necessary measures to limit dispersion of dust and sediment into the air and water when sawing, demolishing and loading the asphalt.

3.1 GENERAL

- .1 Dynamiting is strictly prohibited.
- .2 Remove contaminated or dangerous materials as defined by authorities having jurisdiction, relating to environmental protection, from site and dispose of in safe manner to minimize danger at site or during disposal.
- .3 At the end of each day of operation:
 - .1 Ensure structure is safe and stable
 - .2 Make sure the security perimeter is functional.
 - .3 Leave Work area clean.
- .4 Clear the asphalt surfaces left in place of any debris generated by the removal work using motorized rotary sweeper or hand brooms, as necessary.
- .5 Waste management: separate waste materials for reuse and recycling in accordance with Section 01 74 21- Construction/Demolition Waste Management and Disposal.

END OF SECTION

Partie 1 General

1.1 CONTENTS OF SECTION

- .1 The contents of this section concern only the following activities:
 - .1 Concrete demolition required to carry out repairs with concrete formwork on the walls of the spur wharf.
 - .2 Demolition of the concrete slab required to repair the surface layer of the wharf.

1.2 RELATED SECTIONS

- .1 Section *02 41 13.14 – Asphalt Removal* concerns the Work to demolish the concrete slab and to repair the concrete walls.
- .2 Section *31 23 33.01 – Excavation, Trenching and Backfilling* concerns the Work to excavate the aggregate material currently in place and to place a new granular subbase.

1.3 SUBMITTALS FOR APPROVAL AND INFORMATION

- .1 Submit documents and samples in accordance with Section 01 33 00 - Submittal Procedures and Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 The Contractor must ensure compliance with all requirements for the transmission of documents, samples and reports.
- .3 Provide copies of weigh slips, bills of lading, receipts and certificates issued by landfill sites and authorized reuse and recycling centres for all materials removed from the construction site.
- .4 Obtain written authorization from the Departmental Representative before sending materials off-site.

1.4 EXISTING CONDITIONS

- .1 "Existing conditions" means the condition of the structures to be demolished on the day of bid acceptance.

1.5 DEMOLITION METHOD

- .1 The Contractor must obtain the opinions of its own experts regarding the methods, equipment, materials and techniques to be used for concrete demolition.
 - .1 The demolition method must be clearly explained to the Departmental Representative at the kickoff meeting.
 - .2 In demolishing the concrete, the Contractor must use a method, equipment, materials and techniques that safeguard and maintain the structures that must remain in place.
 - .3 The Contractor's work method must clearly minimize the risk of discharging debris into the seabed.

- .4 The Contractor must assess the soundness of the structure to be demolished and develop a work method adapted to the requirements of the structure. Changes in the condition of the structure during the Work will in no case constitute a valid reason for claiming additional payment.

1.6 MANAGEMENT OF DEMOLITION DEBRIS

- .1 In accordance with section 01 35 43 – Environmental Protection, discharge of demolition materials (concrete, aggregate materials, steel, pavement, etc.) into the aquatic environment is prohibited.
- .2 Demolition of the concrete on the walls of the wharf entails a hazard of aggregate material and concrete debris falling into the aquatic environment. The Contractor must immediately recover all all discharged material, whatever its size and nature.

Partie 2 Product

2.1 MACHINERY AND EQUIPMENT

- .1 Heavy machinery:
 - .1 Vehicles must comply with the requirements of the *On-Road Vehicle and Engine Emission Regulations*, CEPA-SOR/2003-2, under the CEPA.
 - .2 Leave machinery running only while in use, except where extreme temperatures prohibit shutting machinery down.
- .2 Equipment:
 - .1 The use of an air hammer positioner-activator-manipulator (PAM) as support and assistance equipment is authorized for manual air hammers.
 - .2 The Contractor is authorized to use a 15 kg or 30 kg air hammer until the first reinforcement mat. A hydraulic drill of 60 J or less can be used instead of an air hammer.
 - .3 The Contractor must use a 7 kg air hammer to remove the concrete around and under the reinforcing steel.
 - .4 The Contractor may use a hydraulic drill of 350 J or less to demolish the concrete slab.

Partie 3 Execution

3.1 CONCRETE SLAB DEMOLITION

- .1 Use appropriate equipment and machinery to demolish the 225 mm thick concrete slab.
- .2 The use of hydraulic drills is permitted in demolishing the concrete slab.
 - .1 The maximum power of the hydraulic drill must be 350 J.
 - .2 The weight of the carrier vehicle must not exceed 3000 kg and must be adapted to the air hammer being used.
 - .3 There must be at least 10,000 mm between each hydraulic drill.

- .3 Take all necessary measures to limit dispersion of dust and sediment into the air and water when sawing, demolishing and loading the concrete.

3.2 DEMOLITION OF BUTTRESS SECTION FOR THE COPE WALL

- .1 Make a saw mark on the sections of the buttress to be repaired, as indicated in the drawing. Do not damage the existing concrete walls that must remain in place.
- .2 Demolish the section of the buttress to be repaired. Use a 15 or 30 kg air hammer until the first reinforcement mat and a 7 kg air hammer around and under the existing reinforcing steel.
- .3 Safeguard and maintain existing steel reinforcements.
- .4 Take all necessary measures to limit dispersion of dust and sediment into the air and water when sawing, demolishing and loading the concrete.

3.3 GENERAL

- .1 Blasting operations during demolition are strictly prohibited.
- .2 Remove contaminated or dangerous materials as defined by authorities having jurisdiction, relating to environmental protection, from site and dispose of in safe manner to minimize danger at site or during disposal.
- .3 At the end of each day of operation:
 - .1 Ensure structure is safe and stable
 - .2 Make sure the security perimeter is functional.
 - .3 Leave Work area clean.
- .4 Demolish to minimize dusting.
- .5 Waste management: separate waste materials for reuse and recycling in accordance with Section 01 74 21- Construction/Demolition Waste Management and Disposal.

END OF SECTION

Partie 1 General

1.1 REFERENCES

- .1 Canadian Standards Association (CSA International)
 - .1 CAN/CSA - A23.1/A23.2- 09 Concrete Materials and Methods of Concrete Construction.
 - .2 CAN/CSA M92 -92 Concrete Formwork.
 - .3 CAN/CSA-O86S1-05 Supplement No. 1 to CAN- CSA-O86-01, Engineering Design in Wood.
 - .4 CSA O121-08, Douglas Fir Plywood.
 - .5 CSA O151-09, Canadian Softwood Plywood.
 - .6 CSA O153-M1980 R2008, Poplar Plywood.
 - .7 CAN/CSA-O325 R2003, Construction Sheathing.
 - .8 CSA O437 Series 93- R2006, Standards on OSB and Waferboard.
 - .9 CSA S269.1, Falsework for Construction Purposes.
 - .10 CAN/CSA-S269.3-M92 Concrete Formwork.

1.2 SUBMITTALS FOR APPROVAL/INFORMATION

- .1 Provide submittals in accordance with Section 01 33 00- Submittal Procedures.
- .2 Submit shop drawings for formwork and falsework.
 - .1 Submit drawings stamped and signed by a qualified professional engineer registered or licensed in the Province of Quebec, Canada.
- .3 Shop drawings must indicate, show or include the method and schedule of construction, shoring, stripping and re-shoring procedures, materials, special architectural exposed finishes, arrangement of joints, ties and liner components, and locations of temporary embedded parts. Comply with CAN/CSA-S269.3 for formwork drawings.
- .4 Shop drawings must indicate, show or include formwork design data: permissible rate of concrete placement, and temperature of concrete, in forms.
- .5 Indicate sequence of erection and removal of formwork/falsework.

Partie 2 Product

2.1 MATERIALS

- .1 For concrete without special architectural features, use wood and wood product formwork materials to CSA-O121, CAN/CSA-O86, CSA O437 Series-93 (2006) and CSA O153.
 - .1 Plywood panels must be at least 15 mm thick.
 - .2 The wood must be in new condition; the corners and edges must be intact and smooth.

- .2 Metal forms are also accepted. However, these must be carefully cleaned before use in order to eliminate any trace of rust or deterioration.
- .3 Formwork must comply with standard CAN3-A23.1-M77 and with the approved drawings. Comply with maximum tolerances for finished concrete structures as specified in ACI standard 347 - Recommended Practice for Concrete Formwork.
- .4 Form release agent: non-toxic, low VOC.
- .5 Form stripping agent: colourless mineral oil, non-toxic, low VOC, free of kerosene, with viscosity between 70 and 110 and of 15 to 24 mm²/s at 40°C, with an open cup flash point of at least 150°C.

Partie 3 Execution

3.1 SITE PREPARATION

- .1 Before placing the formwork, make sure the concrete surfaces to be repaired are acceptable and allow for the work to be carried out.
 - .1 The Contractor must conduct a visual inspection jointly with the Departmental Representative for all surfaces to be repaired prior to placement of the formwork.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery during inspection.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.
- .2 Ensure the surfaces to be repaired are clean. Re-clean the surfaces with high-pressure water jet if necessary.

3.2 FORMWORK

- .1 Fabricate and erect formwork in accordance with CAN/CSA-S269.3 to produce finished concrete conforming to shape, dimensions, locations and levels indicated within tolerances required by CSA-A23.1/A23.2.
- .2 Align joints and make watertight.
- .3 Unless specified otherwise, use 25 mm chamfer strips on external corners and/or 25 mm fillets at interior corners, joints, as shown in drawing.

3.3 FORMWORK CLEANING

- .1 After formwork is placed, visually inspect the inside of the surface to be repaired and clean using a jet of compressed air or a vacuum cleaner to remove any foreign bodies.

3.4 FORM REMOVAL

- .1 Leave formwork in place for following minimum periods of time after placing concrete.
 - .1 72 hours for vertical walls.

- .2 Remove formwork, taking care to avoid damaging the portions of the structure that must remain in place. Repair the holes left by the form ties with a cement mortar.
- .3 Re-use formwork and falsework subject to requirements of CSA-A23.1/A23.2.

END OF SECTION

Partie 1 General

1.1 REFERENCES

- .1 American Concrete Institute (ACI)
 - .1 SP-66-04, ACI Detailing Manual 2004.
- .2 ASTM International
 - .1 ASTM A82/A82M, Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
 - .2 ASTM A143/A143M, Standard Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement.
 - .3 ASTM A185/A185M, Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.
 - .4 <ASTM A775/A775M-07b, Standard Specification for Epoxy-Coated Steel Reinforcing Bars.
- .3 CSA International
 - .1 CSA-A23.1-[09]/A23.2-[09], Concrete Materials & Methods of Concrete Construction/ Test Methods and Standard Practices for Concrete.
 - .2 CAN/CSA-A23.3-[04(R2010)], Design of Concrete Structures.
 - .3 CSA-G30.18-[09], Carbon Steel Bars for Concrete Reinforcement.
 - .4 CSA-G40.20/G40.21-04(R2009)], General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .5 CAN/CSA G164-[M92(R2003)], Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .6 CSA W186-[M1990(C2007)], Welding of Reinforcing Bars in Reinforced Concrete Construction.
- .4 Reinforcing Steel Institute of Canada (RSIC)
 - .1 IAAC-[2004], Reinforcing Steel Manual of Standard Practice.

1.2 SUBMITTALS FOR APPROVAL/INFORMATION

- .1 Prepare reinforcement drawings in accordance with RSIC Manual of Standard Practice.
- .2 Provide submittals in accordance with Section 01 33 00- Submittal Procedures.
- .3 Submit shop drawings of concrete reinforcements.
 - .1 Submit drawings stamped and signed by a qualified professional engineer registered or licensed in the Province of Quebec, Canada.
- .4 Indicate placement of reinforcements and the following.
 - .1 Bar bending details.
 - .2 Lists of reinforcements.

- .3 Quantities of reinforcement.
- .4 Reinforcement size, spacing and location, and necessary mechanical junctions if their use is authorized by the Departmental Representative. The reinforcements shown must be marked with an identifying code so that they can be placed without consulting the structural drawings.
- .5 Indicate sizes, spacings and locations of chairs, spacers and hangers.
- .5 Detail lap lengths and bar development lengths to CAN/CSA-A23.3, unless otherwise indicated.

1.3 QUALITY ASSURANCE

- .1 Mill Test Report: upon request, provide Departmental Representative with certified copy of mill test report of reinforcing steel, minimum 4 weeks prior to beginning reinforcing work.
- .2 Upon request, submit in writing to Departmental Representative proposed source of reinforcement material to be supplied.

1.4 TRANSPORT, STORAGE AND HANDLING

- .1 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .2 Storage and handling
 - .1 Store materials off the ground, in a clean area, in accordance with the manufacturer's recommendations.
 - .2 Replace defective or damaged materials with new.

Partie 2 Product

2.1 MATERIALS

- .1 Substitute different size bars only if permitted in writing by Departmental Representative.
- .2 All reinforcing bars must be made of billet steel, grade 400, conforming to CSA-G30.18, unless indicated otherwise.
- .3 Cold drawn annealed steel wire ties: to ASTM A82/ A82M.
- .4 Chairs, bolsters, bar supports, spacers: to CSA-A23.1/A23.2.
- .5 Mechanical splices: subject to approval of Departmental Representative.

2.2 FABRICATION

- .1 Fabricate reinforcing steel in accordance with CSA-A23.1/A23.2 and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Canada.
- .2 Obtain Departmental Representative's written approval for locations of reinforcement splices other than those shown on placing drawings.
- .3 Ship bundles of bar reinforcement, clearly identified in accordance with bar bending details and lists.

Partie 3 Execution

3.1 SITE PREPARATION

- .1 Before placing new reinforcing bars, make sure surfaces to be repaired are acceptable and allow for the work to be carried out.
 - .1 The Contractor must conduct a visual inspection jointly with the Departmental Representative for all surfaces to be repaired prior to placement of the formwork.
 - .2 Inform the Departmental Representative of unacceptable conditions immediately upon discovery during inspection.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.
- .2 Existing reinforcements must remain in place, unless they have major defects that may jeopardize the quality of the repair work. In this case, immediately inform the Departmental Representative.
- .3 Make sure the existing reinforcements that must remain in place are clean. Reclean the surfaces with a high-pressure water jet if necessary.

3.2 FIELD BENDING

- .1 Do not field bend or field weld reinforcement except where indicated or authorized by Departmental Representative.
- .2 When field bending is authorized, bend without heat, applying slow and steady pressure.
- .3 Replace bars that develop cracks or splits.

3.3 PLACING REINFORCEMENT

- .1 Place reinforcing steel as indicated on placing drawings in accordance with CSA-A23.1/A23.2.
- .2 The concrete covering must be at least 50 mm thick for the slab and 75 mm thick in other locations.
- .3 The reinforcing bars must be securely fastened using steel wire ties to avoid displacement during concrete placement. They must be fastened at every 300 mm c/c crossover.

3.4 ACCEPTANCE OF REINFORCEMENTS

- .1 The Departmental Representative must conduct a visual inspection of formwork and reinforcements before the concrete is poured.
- .2 After receiving written approval from the Departmental Representative, the Contractor will be authorized to begin pouring the concrete.
- .3 Ensure cover to reinforcement is maintained during concrete pour.

END OF SECTION

Partie 1 General

1.1 RELATED SECTIONS

- .1 Section *31 05 16 - Aggregate Materials.*
- .2 Section *31 23 33.01 - Excavation, Trenching and Backfilling.*

1.2 REFERENCE

- .1 ASTM International
 - .1 ASTM C260/C260M, Standard Specification for Air-Entraining Admixtures for Concrete.
 - .2 ASTM C494/C494M, Standard Specification for Chemical Admixtures for Concrete.
 - .3 ASTM C1017/C1017M, Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.
- .2 Canadian Standards Association (CSA International).
 - .1 CSA-A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
 - .2 CSA A283, Qualification Code for Concrete Testing Laboratories.
 - .3 CSA-A3000, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).

1.3 ADMINISTRATIVE DETAILS

- .1 Pre-Installation Meetings: convene a coordination meeting with Departmental Representative one week prior to beginning concrete construction work.

1.4 SUBMITTALS FOR APPROVAL/INFORMATION

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 At least one (1) week before commencing work, submit to the Departmental Representative the datasheets and, where applicable, samples of the following materials proposed for the work:
 - .1 Type of supplementary cementing material
 - .2 Type of hydraulic cement compound
 - .3 Admixtures
 - .4 Type of aggregate, fine and coarse
- .3 Provide testing and inspection results and reports for review by Departmental Representative and do not proceed without written approval when deviations from mix design or parameters are found.

1.5 QUALITY ASSURANCE

- .1 Submit valid and recognized certificate from plant delivering concrete to Departmental Representative a minimum of one (1) week prior to starting concrete work.
- .2 Provide test data and certification by qualified independent inspection and testing laboratory that materials and mix designs used in concrete mixture will meet specified requirements.

1.6 TRANSPORT, STORAGE AND HANDLING

- .1 Delivery and acceptance
 - .1 Concrete hauling time: maximum allowable time limit for concrete to be delivered to site of Work and discharged not to exceed 120 minutes after batching.
 - .1 Do not modify maximum time limit without receipt of prior written agreement from Departmental Representative and concrete producer as described in CSA A23.1/A23.2.
 - .2 Deviations to be submitted for review by the Departmental Representative.
 - .2 Concrete delivery: ensure continuous concrete delivery from plant meets CSA A23.1/A23.2.

1.7 WEATHER AND MARINE CONDITIONS

- .1 The Contractor must commence Work when the weather and marine conditions are favourable to concrete placement.
 - .1 Air and water temperature must be greater than 5°C while the concrete is being poured and during the three-day curing period.
 - .2 The wind, wave height and levels of roughness in the harbour must allow for safe execution of the work.
- .2 The Contractor will be responsible for any damage caused by violent storms, tides or storm surges. In the event of damage due to poor weather or other circumstances beyond the control of the Departmental Representative, concrete placement must be started over again to the satisfaction of the Departmental Representative, at no additional cost.

Partie 2 Product

2.1 MATERIALS

- .1 Cement: to CSA-A3001, type GUb – SF or GUb-F/SF.
- .2 Water: to CSA A23.1/A23.2.
- .3 Galvanizing: hot dipped galvanizing with minimum zinc coating of 610 g/m², to CSA A-123.
- .4 Air-entraining admixtures: to ASTM C260.
- .5 Chemical admixtures:

- .1 accelerating admixtures are not permitted.
- .2 Do not use calcium chloride or compounds containing calcium chloride.
- .3 Superplasticizers, water reducers, retarding admixtures: to ASTM C494.
- .6 Soprema or equivalent membrane to repair the slab on grade for vertical surfaces.
- .7 Premoulded joint fillers.
 - .1 Bituminous impregnated fiber board: to ASTM D1751.
- .8 Joint sealer/filler: grey, to CAN/CGSB-19.24, Type 1, Class B.

2.2 MIXES

- .1 Proportion normal density concrete in accordance with CAN/CSA-A23.1/A23.2 to achieve a mix with the following qualities:
 - .1 Type 1 concrete: for concrete used to pour slabs, beams, manholes and service supply bases.
 - .1 Type GU-SF Portland cement.
 - .2 Minimum compressive strength at 28 days: 35 MPa.
 - .3 Water/cement ratio: less than 0.40.
 - .4 Exposure classification: C-1.
 - .5 Nominal size of coarse aggregate: 20 mm.
 - .6 Slump at time and point of discharge: 50 to 100 mm.
 - .7 Air content: 4% to 7%.
 - .8 Chemical admixtures: water reducers that increase strength, retarding or accelerating admixtures, strength reinforcers, air-entraining admixtures, superplasticizers, in accordance with the manufacturer's recommendations.
 - .2 Type 2 concrete: for filling hollow areas under the slab.
 - .1 Type GU-SF Portland cement.
 - .2 Minimum compressive strength at 28 days: 20 MPa.
 - .3 Water/cement ratio: less than 0.40.
 - .4 Exposure classification: C-1.
 - .5 Nominal size of coarse aggregate: 20 mm.
 - .6 Slump at time and point of discharge: 50 to 100 mm.
 - .7 Air content: 4% to 7%.
 - .8 Chemical admixtures: water reducers that increase strength, retarding or accelerating admixtures, strength reinforcers, air-entraining admixtures, superplasticizers, in accordance with the manufacturer's recommendations.

Partie 3 Execution

3.1 SITE PREPARATION

- .1 Prior to placing the concrete, the Contractor must:
 - .1 Advise the Departmental Representative at least 72 hours in advance of concreting operations.
 - .2 Conduct a visual inspection jointly with the Departmental Representative for all surfaces to be repaired prior to concrete placement.
 - .3 Inform Departmental Representative of unacceptable conditions immediately upon discovery during inspection.
 - .4 Proceed with concrete placement only after unacceptable conditions have been remedied and after receiving written approval to proceed from Departmental Representative.
- .2 Keep a record of the concreting work indicating the exact date and location of every concrete batch, concrete characteristics, weather conditions (direction and speed of winds, temperature, amount of sun, atmospheric pressure, etc.), marine conditions (tide levels, roughness, height and direction of waves, etc.) and samples taken.

3.2 PLACING REPAIR CONCRETE

- .1 Repair any damage observed on the buttress of the cope wall and the mooring bollard.
 - .1 Use a saw mark in the sound concrete to identify the surface to be repaired.
 - .2 Demolish the concrete with the appropriate equipment.
 - .3 Install the anchoring and reinforcing steel, as illustrated in the drawing, where necessary.
 - .4 Clean the surface of the concrete to remove any trace of dust, oil, grease or other matter that may obstruct adherence.
 - .5 Install the formwork and pour the filler concrete.
 - .6 Carefully clean existing surfaces and wet down surface before pouring fresh concrete.
 - .1 The existing concrete must be saturated surface dry (SSD).
 - .2 The free water at the bottom of the formwork must be removed before placement of fresh concrete.
 - .7 Remove the formwork and fill the holes left by the form ties.
 - .8 Do not obstruct functional existing weepholes.
- .2 Apply a bonding agent with anticorrosion properties to the existing concrete and existing reinforcements in accordance with the supplier's instructions. The product must have the following characteristics:
 - .1 Contain three components:
 - .1 Cement base.
 - .2 Epoxide base.
 - .3 Water base.

- .2 Bonding resistant at day 14 pursuant to ASTM C882:
 - .1 Fresh on fresh: 20 MPa.
 - .2 12-hour open time: 13 MPa.
- .3 Finishing and curing:
 - .1 Wet curing for a minimum of 3 days.
 - .2 Finish concrete to CSA A23.1/A23.2.

3.3 PLACING CONCRETE (BEAMS AND SLAB)

- .1 If the Contractor elects to use a concrete pump, a suitability test is required. The test must be performed with the same parameters as those plans during the Work: same pump model, length and diameter of the pump line. The test must show that the concrete characteristics are maintained at the pump output.
- .2 Place concrete reinforcing in accordance with Section 03 20 00– Concrete Reinforcing.
- .3 Ensure reinforcement and inserts are not disturbed during concrete placement.
- .4 Make sure the minimum coverage of the reinforcements is achieved with fresh concrete.
- .5 Wet the granular subbase in place prior to pouring the fresh concrete.
- .6 Use procedures as reviewed by Departmental Representative or those noted in CSA A23.1/A23.2 to remove excess bleed water. Ensure surface is not damaged.
- .7 Use curing compounds compatible with applied finish on concrete surfaces.
- .8 Finish concrete to CSA A23.1/A23.2, brushed surface.
- .9 Unless indicated otherwise, finish with vibrating screed. Ensure compliance with slopes illustrated in the drawing.
- .10 Install expansion joint in the locations shown in the drawing.

END OF SECTION

Partie 1 General

1.1 REFERENCES

- .1 Canadian Standards Association (CSA International)
 - .1 CAN/CSA C22.2 No. 18-98 (R2003), Outlet Boxes, Conduit Boxes, Fittings and Associated Hardware, A National Standard of Canada.
 - .2 CSA C22.2 No. 56-04, Flexible Metal Conduit and Liquid-Tight Flexible Metal Conduit.
 - .3 CSA C22.2 No. 211.2-FM1984(R2003), Rigid PVC (Unplasticized) Conduit.
 - .4 CAN/CSA C22.2 No. 227.3-05, Nonmetallic Mechanical Protection Tubing (NMPT), A National Standard of Canada.

1.2 SUBMITTALS FOR APPROVAL/INFORMATION

- .1 Provide submittals in accordance with Section 01 33 00- Submittal Procedures.
- .2 Product data: submit manufacturer's printed product literature, specifications and datasheets.
 - .1 Submit cable manufacturing data.
- .3 Quality assurance
 - .1 Test reports: submit certified test reports issued by recognized independent laboratories.
 - .2 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
 - .3 Instructions: submit manufacturer's installation instructions.

1.3 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21- Construction/Demolition Waste Management And Disposal.
- .2 Use designated containers for substances that meet the definition for toxic or hazardous waste.
- .3 Ensure that empty containers are sealed and stored properly out of the reach of children so that they can be disposed of.

Partie 2 Product

2.1 CONDUITS

- .1 FRE conduits.

2.2 CONDUIT FASTENINGS

- .1 One hole malleable cast-iron straps to secure surface conduits 50 mm and smaller.

- .1 Two hole steel straps for conduits larger than 50 mm.
- .2 Beam clamps to secure conduits to exposed steel work.
- .3 Threaded rods, 6 mm dia., to support suspended channels.

2.3 CONDUIT FITTINGS

- .1 Fittings: to CAN/CSA C22.2 No. 18, manufactured for use with conduit specified. Coating: same as conduit.
- .2 Ensure factory "ells" where 90 degrees bends for 25 mm and larger conduits.

2.4 EXPANSION FITTINGS FOR RIGID CONDUITS

- .1 Weatherproof expansion fittings with internal bonding assembly suitable for 100 mm linear expansion.
- .2 Watertight expansion fittings with integral bonding jumper suitable for linear expansion and 19 mm deflection.
- .3 Weatherproof expansion fittings for linear expansion at entry to box.

2.5 FISH CORD

- .1 Polypropylene.

Partie 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

3.2 INSTALLATION

- .1 Conceal conduits except in mechanical and electrical service rooms.
- .2 Surface mount conduits.
- .3 Use rigid FRE conduit underground.
- .4 Delivery Only v.b Leveling, blocking, set-up, de-blocking & return for areas not specified
- .5 Remove and replace blocked conduit sections.
 - .1 Do not use liquids to clean out conduits.
- .6 Dry conduits out before installing wire.

3.3 SURFACE CONDUITS

- .1 Install conduits parallel or perpendicular to wharf grid lines.
- .2 Group conduits wherever possible on suspended and surface channels.

- .3 Do not pass conduits through structural members except as indicated.

3.4 CONCEALED CONDUITS

- .1 Install conduits parallel or perpendicular to wharf grid lines.
- .2 Do not install horizontal runs in masonry walls.
- .3 Do not install conduits in terrazzo or concrete toppings.

3.5 UNDERGROUND CONDUITS

- .1 Slope conduits to provide drainage.
- .2 Waterproof joints (joints on PVC conduits excepted) with heavy coat of bituminous paint.

3.6 CLEAN-UP

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.
- .2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

Partie 1 General

1.1 REFERENCES

- .1 American Society of Testing and Materials (ASTM) International
 - .1 ASTM C117-04, Standard Test Method for Material Finer than 0.075 mm (No.200) Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C136-06, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .3 ASTM D422-63, Standard Test Method for Particle-Size Analysis of Soils.
 - .4 ASTM D698-00ae1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³) (600 kN-m/m³).
 - .5 ASTM D1557-07e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³) (2,700 kN-m/m³).
 - .6 ASTM D4318-10, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-8.1-88, Sieves Testing, Woven Wire, Inch Series.
 - .2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.
- .3 Canadian Standards Association (CSA International).
 - .1 CAN/CSA-A3000, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
 - .1 CSA-A3001 Cementitious Materials for Use in Concrete.
 - .2 CSA-A23/A23.2, Concrete Materials and Methods of Concrete Construction / Methods of Test for Concrete.
- .4 Ministère des Transports du Québec
 - .1 Tome VII – Matériaux 2016.

1.2 SUBMITTALS FOR APPROVAL/INFORMATION

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product data
 - .1 Submit manufacturer's printed product literature, instructions and datasheets for the aggregate. The datasheets must indicate product characteristics, performance criteria, physical size, finish and limitations.

1.3 TRANSPORT, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.

- .2 Transportation and handling: handle and transport aggregates to avoid segregation, contamination and degradation.

Partie 2 Product

2.1 MATERIALS

- .1 The granular materials must comply with the following gradation:

FUSEAUX GRANULOMÉTRIQUES DE SPÉCIFICATION POUR FONDATION, SOUS-FONDATION, COUCHE DE ROULEMENT GRANULAIRE ET ACCOTEMENT										
Matériaux granulaires	Tamis en (mm)								Tamis en (µm)	
	112	80	56	31,5	20	14	5	1,25	315	80
(% passant)										
MG-20				100	90-100	68-93	35-60	19-38	9-17	2-7
MG-20b				100	90-100	68-93	35-60	19-38	9-17	5-11
MG-56		100	82-100	50-80	---	---	25-50	11-30	4-18	2-7
MG-112	100	---	---	---	---	---	35-100	---	---	0-10
CG-14					100		35-100			0-10

- .2 Aggregate quality: sound, hard, durable material free from soft, thin, elongated or laminated particles, organic material, clay lumps or minerals, free from adherent coatings and injurious amounts of disintegrated pieces or other deleterious substances.
- .3 Liquid limit: to ASTM D 4318, maximum 25.
- .4 Plasticity index: to ASTM D 4318, maximum 6.
- .5 Los Angeles degradation: maximum 50.
- .6 Micro-Deval degradation: maximum 40.
- .7 Micro-Deval and Los Angeles combined: maximum 85.
- .8 Organic matter: maximum 0.8%.
- .9 Fine aggregates satisfying requirements of applicable section to be one, or blend of following:
- .1 Screenings produced in crushing of quarried rock, boulders, gravel or slag.
- .10 Coarse aggregates satisfying requirements of applicable section to be one of or blend of following:
- .1 Crushed rock.
- .2 Gravel and crushed gravel composed of naturally formed particles of stone.
- .3 The 50-200 mm rock must be crushed, washed and free of particles smaller than 5 mm.

2.2 SOURCE QUALITY CONTROL

- .1 Inform Departmental Representative of proposed source of aggregates and provide access for sampling one (1) week minimum before starting production.
- .2 If materials from proposed source do not meet, or cannot reasonably be processed to meet, specified requirements, locate alternative source.

- .3 Advise Departmental Representative one (1) week minimum in advance of proposed change of material source.
- .4 Acceptance of material at source does not preclude future rejection if it fails to conform to requirements specified, lacks uniformity, or if its field performance is found to be unsatisfactory.

Partie 3 Execution

3.1 CLEAN-UP

- .1 Progress cleaning: clean in accordance with Section 01 74 11 - Cleaning.

END OF SECTION

Partie 1 General

1.1 REFERENCES

- .1 American Society of Testing and Materials (ASTM) International
 - .1 ASTM C117-04, Standard Test Method for Material Finer than 0.075 mm (No.200) Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C136-05, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .3 ASTM D422-632002, Standard Test Method for Particle-Size Analysis of Soils.
 - .4 ASTM D698- 00ae1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (12,400 ft-lbf/ft).
 - .5 ASTM D1557- 02e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft).
 - .6 ASTM D4318, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- .2 Canadian General Standards Board (CGSB).
 - .1 CAN/CGSB-8.1, Sieves, Testing, Woven Wire, Inch Series.
 - .2 CAN/CGSB-8.2, Sieves Testing, Woven Wire, Metric Series.
- .3 Canadian Standards Association (CSA International).
 - .1 CAN/CSA-A3000, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
 - .1 CSA-A3001 Cementitious Materials for Use in Concrete.
 - .2 CSA-A23/A23.2, Concrete Materials and Methods of Concrete Construction / Methods of Test for Concrete.
- .4 U.S. Environmental Protection Agency (EPA)/Office of Water
 - .1 EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.2 DEFINITIONS

- .1 Excavation classes: a single excavation class is recognized:
 - .1 Common excavation: excavation of materials of whatever nature, which are not included under definitions of rock excavation.
- .2 Unclassified excavation: excavation of deposits of whatever character encountered in Work.
- .3 Waste material: excavated material unsuitable for use in work or surplus to requirements.
- .4 Borrow material: material obtained from locations outside area to be graded, and required for construction of fill areas or for other portions of Work.

1.3 SUBMITTALS FOR APPROVAL/INFORMATION

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

1.4 WASTE MANAGEMENT AND DISPOSAL

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

1.5 EXISTING CONDITIONS

- .1 Water pipe:
 - .1 There is a water conduit of 50 mm in diameter under the bituminous concrete to be demolished. Some sections of the conduit have been unearthed by the sea, whereas others have only been swept over by the sea.
 - .2 The location and depth of the conduits are illustrated approximately on the drawing; the Contractor must determine the exact positioning of the conduits before beginning demolition work.
- .2 The wharf's electrical lines:
 - .1 There are two electrical lines located under the bituminous concrete to be demolished. Some sections of the line have been unearthed by the sea, whereas others have only been swept over by the sea.
 - .2 The concrete buttress for the water pipe and the electrical lines must be demolished and removed during excavation work, as illustrated in the drawings.

Partie 2 Product

2.1 MATERIALS

- .1 Backfill aggregate materials: in accordance with section 31 05 16 - Aggregate Materials.
- .2 Geotextiles: in accordance with section 31 32 19.16– Soil Stabilization with Geotextiles.

Partie 3 Execution

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to the water.
- .2 In poor weather, the MLI spur wharf is particularly subject to waves breaking on the wharf. The Contractor must carry out backfill, grading and compacting during favourable weather and marine conditions.

3.2 SITE PREPARATION

- .1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.
- .2 Remove the layer of asphalt and the concrete in separate operations.

- .3 Keep excavations clean, free of standing water, and loose soil.
- .4 Where soil is subject to significant volume change due to change in moisture content, cover and protect to Departmental Representative's approval.
- .5 Protect natural and man-made features required to remain undisturbed.
- .6 Protect buried utility services that are required to remain undisturbed.

3.3 STOCKPILING

- .1 Stockpile fill materials in areas designated by Departmental Representative.
 - .1 Stockpile granular materials in manner to prevent segregation.
- .2 Protect fill materials from contamination.
- .3 Implement sufficient erosion and sediment control measures to prevent sediment release off construction boundaries and into water bodies.

3.4 EXCAVATION OF EXISTING BACKFILL

- .1 Advise Department Representative at least seven (7) days before excavation operations commence.
- .2 Excavate to lines, grades, elevations and dimensions as indicated in the drawings. Work must be conducted so as to separate the range of each contamination criterion by in distinct layers and to dispose of them at the appropriate landfill sites.
- .3 Excavation must not interfere with bearing capacity of adjacent foundations.
- .4 When the bottom of the excavation is reached, grade the granular material in place using a grader or bulldozer to achieve a uniform profile, without holes or bumps.
- .5 Conduct a land survey showing the various elevations for the excavations and provide an electronic copy to the Departmental Representative.
 - .1 The Departmental Representative must give written approval of the excavation work before the Contractor is authorized to place the granular subbase.
- .6 Lay the geotextile in accordance with Section 31 32 19.16 – Soil Stabilization with Geotextiles.

3.5 BACKFILL MATERIALS

- .1 Compaction equipment to be capable of obtaining required material densities.
 - .1 A reference area must be prepared at the work site prior to compacting the granular material. The purpose of this reference area is to determine the maximum density of compaction that can be achieved under the conditions at the work site. The reference area must be prepared by a specialized laboratory at the Contractor's expense. It must be carried out under the same conditions as those for the placement of the granular material.
 - .2 The results obtained with the reference area must be provided to the Departmental Representative 24 hours before the granular material is laid. The Departmental Representative must provide written acceptance of the results

before the Contractor is authorized to compact the granular backfill on the concrete slab.

- .2 After the geotextile is laid, place the lower subbase, consisting of MG-56 that meets the following requirements:
 - .1 Placement in layers 300 mm thick
 - .2 Required compaction: 95% of M.P.
 - .3 Placing tolerance: ± 20 mm.
 - .4 Minimal drainage slope: 2%, or as indicated in the drawing.
- .3 Conduct a land survey showing the various elevations for the excavations and provide an electronic copy to the Departmental Representative.
 - .1 The Departmental Representative must give written approval of the placement of the lower subbase before the Contractor is authorized to place the upper subbase.
- .4 After acceptance of the lower subbase, proceed with placement of the upper subbase, consisting of MG-20 that meets the following criteria:
 - .1 Placement of a single layer, 200 mm thick.
 - .2 Required compaction: 98% of the value obtained in the reference area.
 - .3 Placing tolerance: ± 10 mm.
 - .4 Minimal drainage slope: 2%, or as indicated in the drawing.
- .5 Conduct a land survey showing the various elevations for the excavations and provide an electronic copy to the Departmental Representative.

3.6 COMPACTING

- .1 Shape and roll alternately to obtain smooth, even and uniformly compacted subbase.
- .2 To protect the concrete from damage due to excessive vibration, the Contractor must use equipment and a work method that reduces vibrations and the number of passes along the wheel guards.
 - .1 The Contractor's work method must be adjusted based on the results of the reference area.
 - .2 As the total thickness of the granular subbase is relatively thin, the Contractor must avoid over-compacting the material during placement.
- .3 The mass densities achieved by compacting are percentages of the maximum mass densities calculated in accordance with ASTM D698 and ASTM D1557 and must be adjusted based on the reference area.
- .4 Gradually apply water as necessary during compaction of the MG-20 and MG-56 to obtain specified density.
- .5 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.

3.7 RESTORATION

- .1 Upon completion of Work, remove waste materials and debris in accordance with Section 01 74 21- Construction/Demolition Waste Management and Disposal.

END OF SECTION

Partie 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 29 00 - Payment

1.2 REFERENCES

- .1 ASTM International
 - .1 ASTM A123/A123M-[09], Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - .2 ASTM D4491-[99a(2009)], Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
 - .3 ASTM D4595-[09], Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method.
 - .4 ASTM D4716-[08], Standard Test Method for Determining the (In-Plane) Flow Rate Per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head.
 - .5 ASTM D4751-[04], Standard Test Method for Determining Apparent Opening Size of a Geotextile.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-4.2 No. 11.2-[2004] Textile Test Methods - Bursting Strength - Ball Burst Test (Renewal of September 1989).
 - .2 CAN/CGSB-148.1, Methods of Testing Geotextiles (entire series).
 - .1 No. 2-[M85], Methods of Testing Geotextiles and Geomembranes - Mass per Unit Area.
 - .2 No. 3-[M85], Methods of Testing Geotextiles and Geomembranes - Thickness of Geotextiles.
 - .3 No. 6.1-[93], Methods Geotextiles and Geomembranes - Grab Tensile Test for Geotextiles.
 - .4 No. 7.3-[92], Methods of Testing Geotextiles and Geomembranes - Grab Tensile Test for Geotextiles.
 - .5 No. 10-[94], Methods of Testing Geosynthetics Geotextiles - Filtration Opening Size.

1.3 SUBMITTALS FOR APPROVAL/INFORMATION

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product data
 - .1 Submit manufacturer's printed product literature, instructions and datasheets for the geotextiles. The datasheets must indicate product characteristics, performance criteria, physical size, finish and limitations.

1.4 TRANSPORT, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Storage and handling
 - .1 Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect geotextiles from direct sunlight and UV rays.
 - .3 Replace defective or damaged materials with new materials.

Partie 2 Product

2.1 GEOTEXTILES

- .1 Non-woven synthetic fibre fabric supplied in rolls.
- .2 Width: at least 3.5 m.
- .3 Length: at least 25 m.
- .4 Composed of: minimum 85% by mass of polypropylene with inhibitors added to base plastic to resist deterioration by ultra-violet and heat exposure.
- .5 Physical properties:
 - .1 Grab tensile strength and elongation: to CAN/CGSB-148.1, No. 7.3-92.
 - .2 Breaking force: minimum 1,000 N, wet condition.
 - .3 Elongation at break: at least 65%.
 - .4 Tear strength: 450 N.
 - .5 Ball burst strength (Mullen): to CAN/CGSB-4.4.2, No. 11.1-94, minimum 2,800 kPa, wet condition.
- .6 Hydraulic properties:
 - .1 Filtration opening size (FOS): to CAN/CGSB-148.1, No. 10-94.
 - .2 Permeability: 0.18 cm/s.
 - .3 Permittivity: 0.5 s^{-1}
- .7 Factory seams: sewn in accordance with manufacturer's recommendations.
- .8 Thread for sewn seams: equal or better resistance to chemical and biological degradation than geotextile.

2.2 ELASTOMERIC MEMBRANE

- .1 An impervious separation membrane between the existing concrete and fresh concrete consisting of one layer of grip coat that self-adheres to the existing concrete and a composite reinforcement
- .2 Width: $\geq 200 \text{ mm}$
- .3 Membrane thickness: $\geq 3 \text{ mm}$

- .4 Weight: $\pm 3.5 \text{ kg/m}^2$
- .5 Physical properties:
 - .1 Grab tensile strength: $\geq 11 \text{ kN/m}$
 - .2 Elongation at break: 60%
 - .3 Tear strength: $\geq 400 \text{ N}$
 - .4 Puncture resistance: $\geq 1000 \text{ N}$
 - .5 Adhesion to fresh concrete: $\geq 3400 \text{ N/m}$

Partie 3 Execution

3.1 EXAMINATION

- .1 Site conditions: prior to undertaking the installation of geotextiles, ascertain that substrates previously prepared by other sections or contracts are acceptable and allow for the performance of work to manufacturers' 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.

3.2 PLACEMENT OF GEOTEXTILE

- .1 Place geotextile material by unrolling onto graded surface in orientation, manner and locations indicated and retain in position with stones or fill material.
- .2 Place geotextile material smooth and free of tension stress, folds, wrinkles and creases.
- .3 Place geotextile material on sloping surfaces in one continuous length from toe of slope to upper extent of geotextile.
- .4 Overlap each successive strip of geotextile 600 mm over previously laid strip.
 - .1 To reduce overlap, the Contract is permitted to fuse the strips of the placed geotextiles.
- .5 Prevent displacement of geotextiles and protect against damage or deterioration before, during and after the placement of protective layers.
- .6 Lay the protective layer within four (4) hours of placing the geotextile.
- .7 Replace damaged or deteriorated geotextile to approval of the Departmental Representative.

3.3 PLACEMENT OF ELASTOMERIC MEMBRANE

- .1 Position the membrane along the cope wall, around the concrete bases of the mooring bollards, around the concrete base of the service islands, around the reinforced concrete

slab and in any other place where the various structures must be taken apart, as illustrated in the drawing.

- .2 Overlap each strip of membrane over at least 150 mm.
- .3 Brush and clean the surface of the existing concrete before placing the membrane.
- .4 Apply uniform pressure over the entire membrane during placement to ensure proper adherence.

3.4 CLEAN-UP

- .1 Progress cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean.

3.5 PROTECTION

- .1 Prohibit vehicles from driving directly on geotextiles.

END OF SECTION

Partie 1 General

1.1 REFERENCE STANDARDS

- .1 American National Standards Institute/American Water Works Association (ANSI/AWWA)
 - .1 ANSI/AWWA B300-10, Standard for Hypochlorites.
 - .2 ANSI/AWWA B301-10, Standard for Liquid Chlorine.
 - .3 ANSI/AWWA B303-10, Standard for Sodium Chlorite.
 - .4 ANSI/AWWA C104/A21.4-08, Standard for Cement-Mortar Lining for Ductile-Iron Pipe and Fittings.
 - .5 ANSI/AWWA C105/A21.5-10, Standard for Polyethylene Encasement for Ductile-Iron Pipe Systems.
 - .6 ANSI/AWWA C111/A21.11-07, American National Standard for Rubber-Gasket Joints for Ductile-Iron and Fittings.
 - .7 ANSI/AWWA C110/A21.10-08, American National Standard for Ductile-Iron and Grey Iron Fittings for Water.
 - .8 ANSI/AWWA C150/A21.50-08, Standard for Thickness Design of Ductile-Iron Pipe.
 - .9 ANSI/AWWA C151/A21.51-09, Standard for Ductile-Iron Pipe, Centrifugally Cast.
 - .10 ANSI/AWWA C153/A21.53-11, Standard for Ductile-Iron Compact Fittings.
 - .11 ANSI/AWWA C200-05, Standard for Steel Water Pipe - 6 Inch (150 mm) and Larger.
 - .12 ANSI/AWWA C203-08, Standard for Coal Tar Protective Coatings and Linings for Steel Water Pipelines - Enamel and Tape - Hot Applied.
 - .13 ANSI/AWWA C205-07, Standard for Cement-Mortar Protective Lining and Coating for Steel Water Pipe - 4 Inch (100 mm) and Larger - Shop Applied.
 - .14 ANSI/AWWA C206-11, Standard for Field Welding of Steel Water Pipe.
 - .15 ANSI/AWWA C207-07, Standard for Steel Pipe Flanges for Waterworks Service, 4 Inch through 144 Inch (100 mm through 3,600 mm).
 - .16 ANSI/AWWA C208-07, Standard for Dimensions for Fabricated Steel Water Pipe Fittings.
 - .17 ANSI/AWWA C300-11, Standard for Reinforced Concrete Pressure Pipe, Steel-Cylinder Type.
 - .18 ANSI/AWWA C301-07, Standard for Prestressed Concrete Pressure Pipe, Steel-Cylinder Type.
 - .19 ANSI/AWWA C303-08, Standard for Concrete Pressure Pipe, Bar-Wrapped, Steel-Cylinder Type.
 - .20 ANSI/AWWA C500-09, Standard for Metal-Seated Gate Valves for Water Supply Service.
 - .21 ANSI/AWWA C504-10, Standard for Rubber-Seated Butterfly Valves.

- .22 ANSI/AWWA C600-10, Standard for Installation of Ductile-Iron Water Mains, and Their Appurtenances.
- .23 ANSI/AWWA C602-11, Standard for Cement-Mortar Lining of Water Pipelines - 4 Inch (100 mm) and Larger.
- .24 ANSI/AWWA C651-05, Standard for Disinfecting Water Mains.
- .25 ANSI/AWWA C800-05, Standard for Underground Service Line Valves and Fittings.
- .26 ANSI/AWWA C900-07, Standard for Polyvinyl Chloride (PVC) Pressure Pipe, and Fabricated Fittings, 4 Inch through 12 Inch (100 mm - 300 mm), for Water Transmission and Distribution.
- .2 Bureau de normalisation du Québec (BNQ)
 - .1 BNQ 1809-300/2004 (R 2007), Travaux de construction – Clauses techniques générales – Conduites d’eau potable et d’égout.
 - .2 BNQ 1809-900, documents administratifs généraux
- .3 ASTM International
 - .1 ASTM A53/A53M-10, Standard Specification for Pipe, Steel, Black and Hot Dipped, Zinc Coated, Welded and Seamless.
 - .2 ASTM A123/A123M-09, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - .3 ASTM A307-10, Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile.
 - .4 ASTM B88M-05(2011), Standard Specification for Seamless Copper Water Tube [Metric].
 - .5 ASTM C117-04, Standard Test Methods for Material Finer Than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.
 - .6 ASTM C136-06, Standard Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .7 ASTM C478M-11, Standard Specification for Precast Reinforced Concrete Manhole Sections
 - .8 ASTM D698-07e1, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
 - .9 ASTM D2310-[06], Standard Classification for Machine-Made "Fiberglass" (Glass-Fiber-Reinforced Thermosetting Resin) Pipe.
 - .10 ASTM D2657-07, Standard Practice for Heat Fusion Joining of Polyolefin Pipe and Fittings.
 - .11 ASTM D2992-06, Standard Practice for Obtaining Hydrostatic or Pressure Design Basis for "Fiberglass" (Glass-Fiber-Reinforced Thermosetting Resin) Pipe and Fitting.
 - .12 ASTM D2996-01(2007)e1, Standard Specification for Filament-Wound "Fiberglass" (Glass-Fiber-Reinforced Thermosetting Resin) Pipe.
 - .13 ASTM F714-10, Standard Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter.

- .14 ASTM C618-08a, Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
- .4 American Water Works Association (AWWA)/Manual of Practice
 - .1 AWWA M9-2008, Concrete Pressure Pipe.
 - .2 AWWA M11-2004, Steel Pipe - A Guide for Design and Installation.
 - .3 AWWA M17-2006, Installation, Field Testing, and Maintenance of Fire Hydrants.
- .5 CSA International
 - .1 CAN/CSA-Series A257-09, Standards for Concrete Pipe (includes: A257.0, A257.1, A257.2, A257.3 and A257.4).
 - .2 CAN/CSA-A3000-08, Cementitious Materials Compendium (includes: A3001, A3002, A3003, A3004 and A3005).
 - .3 CAN/CSA-B137 Series-09, Thermoplastic Pressure Piping Compendium (includes: B137.0, B137.1, B137.2, B137.3, B137.4, B137.4.1, B137.5, B137.6, B137.8, B137.9, B137.10, B137.11 and B137.12).
 - .1 CAN/CSA-B137.1-09, Polyethylene (PE) Pipe, Tubing, and Fittings for Cold-Water Pressure Services.
 - .2 CAN/CSA-B137.3-09, Rigid Polyvinylchloride (PVC) Pipe and Fittings for Pressure Applications.
 - .4 CSA G30.18-09, Carbon Steel Bars for Concrete Reinforcement.
- .6 Underwriters Laboratories of Canada (ULC)
 - .1 CAN/ULC-S520-07, Standard for Fire Hydrants.
 - .2 CAN/ULC-S543-09, Standard for Internal Lug Quick-Connect Couplings for Fire Hose.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00- Submittal Procedures.
- .2 Product data
 - .1 Submit manufacturer's printed product literature, instructions and datasheets for the water distribution pipes. The datasheets must indicate product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Certification to be marked on pipe.
- .3 Shop drawings:
 - .1 Drawings stamped and signed by professional engineer registered or licensed in Province of Quebec.

1.3 CLOSEOUT SUBMITTALS

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

- .2 Submit the data necessary to produce the as-built drawings, including instructions and list of material required for operation of valves, pipe details, the location of air/vacuum release valves, and fire hydrant details.
 - .1 The data must include the rating of the pipe top, the type of fittings and their location horizontally.
- .3 Operation and maintenance data: submit operation and maintenance data for pipes, valves, curb boxes, valve houses and fire hydrants, for incorporation into O&M manual.

1.4 TRANSPORT, 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
 - .1 Store materials off the ground, in accordance with the manufacturer's recommendations.
 - .2 Store and protect water distribution pipes from nicks, scratches, and the sun's rays.
 - .3 Replace defective or damaged materials with new.
- .4 Packaging waste management: remove for reuse of pallets and return by manufacturer of crates and packaging materials as specified in Construction Waste Management Plan, Waste Reduction Workplan in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

1.5 SCHEDULING OF WORK

- .1 Schedule Work to minimize interruptions to existing services.
- .2 Submit schedule of expected interruptions and adhere to interruption schedule as approved by Departmental Representative.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Closeout Submittals.

Partie 2 Product

2.1 Liner for Drinking Water Conduit

- .1 Solid high-density polyethylene (HDPE) pipes must conform to the requirements of NQ 3624-027 and must be class SDR21 minimum.
- .2 The Contractor must factor in the effects of thermal expansion on high-density polyethylene (HDPE).
- .3 Solid HDPE fittings must conform to the requirements and assembly technique of NQ 3624-027. The requirements of ASTM D 2657 apply to an assembly carried out fusing

HDPE end-to-end. The applicable requirements of ASTM D 3261 or ASTM D 2683 must be adhered to.

Partie 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for the installation of water supply pipes 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 conduits must be installed according to the slopes in order to achieve appropriate drainage of the conduits at the end of the season.

3.2 SITE PREPARATION

- .1 Clean pipes and fittings of accumulated debris and water before installation.
 - .1 Carefully inspect materials for defects and have Departmental Representative approve.
 - .2 Remove defective material from the work site, in accordance with the Departmental Representative's instructions.

3.3 TRENCHING

- .1 Dig trenches in accordance with drawings with slopes and Section 31 23 33.01 - Excavating, Trenching and Backfilling.
- .2 Excavate to a depth such that after backfilling, the pipe can be covered with a layer of materials in accordance with the indications in the drawing.
- .3 Obtain Departmental Representative's approval of trench alignment, depth and slopes prior to placing bedding material or pipe.

3.4 GRANULAR BEDDING

- .1 Place granular bedding in uniform layers no thicker than 150 mm after compacting.
- .2 Do not place material in frozen condition.
- .3 Shape bed true to grade to provide continuous uniform bearing surface for pipe.
- .4 Shape traverse depressions as required to suit joints.
- .5 Compact each layer full width of bed to at least 95% of modified Proctor test reference value. Thickness of bed must be as uniform as possible.

3.5 LAYING THE PIPE

- .1 Lay pipes on prepared bed, true to line and grade.
 - .1 Ensure barrel of each pipe is in contact with shaped bed throughout its full length.
 - .2 Take up and replace defective pipe.
 - .3 Correct pipe which is not in true alignment or grade or pipe which shows differential settlement after installation greater than 10 mm in 3m.
- .2 Do not exceed maximum Joint deflection permitted within limits recommended by pipe manufacturer.
- .3 Keep jointing materials and installed pipe free of dirt and water and other foreign materials.
 - .1 Whenever Work is suspended, install removable watertight bulkhead at open end of last pipe laid to prevent entry of foreign materials.
- .4 Position and join pipes with equipment and methods approved by Departmental Representative.
- .5 Cut pipes in approved manner as recommended by pipe manufacturer, without damaging pipe or its coating. Leave smooth end at right angles to axis of pipe.
- .6 Align pipes before jointing.
- .7 Install gaskets in accordance with manufacturer's recommendations. Support pipes with hand slings or crane as required to minimize lateral pressure on gasket and maintain concentricity until gasket is properly positioned.
- .8 Avoid displacing gasket or contaminating with dirt or other foreign material. Use of lubricant on pipe end (bell) is prohibited.
 - .1 Where applicable, remove displaced or contaminated gasket.
 - .2 Disturbed gasket must be removed, cleaned, lubricated and replaced before joining is attempted.
- .9 Complete each joint before laying next length of pipe.
- .10 Minimize deflection after joint has been made.
- .11 Apply sufficient pressure in making joints to ensure that joint is complete as outlined in manufacturer's recommendations.
- .12 Ensure completed joints are restrained by compacting bedding material alongside and over installed pipes as otherwise approved by Departmental Representative.
- .13 When stoppage of work occurs, block pipes in an approved manner to prevent creep during down time.
- .14 Recheck plastic pipe joints assembled above ground after placing in trench to ensure that no movement of joint has taken place.
- .15 Do not lay pipe on frozen bedding.
- .16 Backfill remainder of trench.

3.6 PIPE SURROUND

- .1 Upon completion of pipe laying and after the Departmental Representative has inspected Work in place, surround and cover pipes with granular materials in accordance with indications.
- .2 Hand place surround material in uniform layers not exceeding 150 mm compacted thickness as indicated.
 - .1 Do not pour materials more than 1200 mm above the pipe's crown to avoid damaging it through impact from the material being poured.
- .3 Place layers uniformly and simultaneously on each side of pipe.
- .4 Do not place material in frozen condition.
- .5 The trench must be backfilled up to 300 mm above the pipe by layer, each of which is at most 200 mm prior to compacting with a CG-14 granular material compacted to 95% of the modified Proctor through the width of the trench, and the backfilling must be carried out on each side of the pipe alternately.

3.7 BACKFILL

- .1 Place backfill material, above pipe surround, in uniform layers not exceeding 300 mm (6 inches) compacted thickness up to grades as indicated.
- .2 Do not place backfill in frozen condition.
- .3 Under the concrete slabs, compact the backfill materials to at least 95% of the modified Proctor.

3.8 REFINISHING

- .1 Once the water supply conduits and pipes are installed and backfilled, restore the surfaces to their original condition, in accordance with the Departmental Representative's instructions.

3.9 CLEAN-UP

- .1 Progress cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean.
- .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 reuse and recycling in accordance with Section 01 74 21- Construction/Demolition Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facilities.

END OF SECTION