

Publics Works and Government Services Canada

Damages to wharf (pile)

Matane

Our/Ref.: 114357.002-402 | Your/Ref.: 083173.001

Technical specification for tender call

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Approved by:

Nicolas Ouellet, Eng. (no. 5000981 OIQ)

PART 1 – GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

- .1 Work under this contract includes a pile and its ladder partial removal and installation of two new piles at the Matane commercial wharf.
- .2 The work includes, without limitation, B-11 bollard dismantling, concrete and pavement demolition around the repair area, pavement installation, new bollard installation, new ladder installation, forms installation, casting of concrete for a support massif and piles and are also included underwater welding works.

1.2 DESCRIPTION OF WORK

- .1 Establish a security perimeter around the work zone identified on the drawing. The security perimeter shall be implemented before the start of work and consist of the following:
 - .1 Contractor's security zone: made of a strong and safe fence, wind-resistant, or any other hoarding deemed safe by Departmental Representative.
 - .2 Traffic signs: provide and install panels and traffic cones, see section 01 52 00.
- .2 Dismantle B-11 bollard and dispose off-site.
- .3 Temporary rip rap displacement, if required, to allow pilling works.
- .4 Dismantle the existing ladder on the existing pile and dispose off-site.
- .5 Remove the damaged existing pile and dispose off-site.
- .6 Bollard base, beam and concrete slab partial demolition and dispose off-site.
- .7 Concrete and pavement saw kerf of the repair area.
- .8 Excave and dispose off-site pavement and concrete.
- .9 Drill and anchor studs in the existing concrete beam, as mentioned on plans.
- .10 Adequate form installation.
- .11 Reinforcement installation, as mentioned on plans.
- .12 New piles installation.
- .13 Attach piles to the existing cathodic protection.
- .14 Casting of concrete for the new concrete massif.
- .15 Concrete pile filling.

- .16 Installation of a new steel ladder.
- .17 Welding of metallic elements, as mentioned on plans.
- .18 New 50 tons bollard installation, as mentioned on plans.
- .19 New pavement installation, as mentioned on plans.
- .20 Waste disposal from wharf.

1.3 C.N.E.S.S.T. REQUIREMENTS (OCCUPATIONAL HEALTH & SAFETY)

- .1 The Contractor shall submit documentary evidence that he himself and his subcontractors have complied with CNESST requirements (Commission des Normes, de l'Équité et de la Santé et de la Sécurité du Travail du Québec).
- .2 Under the provisions of the Act Respecting Occupational Health and Safety in the province of Québec (R.S.Q. Chapter S-2.1) and only for the purposes of that Act, it is the Contractor's responsibility to assume first, from the beginning of the work, the role and obligations of Prime Contractor set out in said Act in addition to obligations pertaining to the employer status assigned under that Act and, second, his obligations with regard to health and safety established in the contract documents.

1.4 BEGINNING OF WORK AND COMPLETION

- .1 The Contractor shall begin work as soon as possible after securing his performance bond and insurance and receiving confirmation that its bid has been accepted. Given the extensive activity on the wharf in Matane, no delay will be accepted.
- .2 The Contractor shall coordinate his work with the ongoing operations in the harbour. Despite the Contractor's reserved work area, exceptional situations may occur that require complete work stoppage and evacuating the site, in which case the Contractor shall refer to Section 01 14 00 – Work Restrictions and Section 01 35 29.06 – Health and Safety Requirements.
- .3 The Contractor will be allowed to work from 6:00 to 18:00 Monday to Friday. Additional time outside of normal hours and on weekends may be authorized by the Departmental Representative if the Contractor files a request 48 hours in advance. Extra time requested with less than a 48-hour advance notice will be automatically rejected by the Departmental Representative.

1.5 CONTRACTOR USE OF PREMISES

- .1 Contractor must coordinate its works with the commercial wharf maintained operations. A Contractor's reserved area is identified on plans. Collaborate and coordinate site utilization as directed by the Departmental Representative and Harbour Master, Mr. Jean-Pierre Harisson (418 566-7152).

- .2 Use of premises is limited to the areas required to perform the work identified on the drawings. Any modifications concerning the use of premises shall be approved in writing by both the Departmental Representative and the Contractor.
- .3 Demolition works will occur nearby the Contractor's reserved area. Contractor must take this situation into account.
- .4 Machinery must be maintained at a safe distance from the wheelgards to do not overload piles in the area because of the wharf reduced capacity.
- .5 Execute work with minimal disruption to the occupants and the normal use of the premises. The shipping of goods on a section of the wharf and traffic in the harbor shall remain operational regardless of the Contractor's activities. Sea transportation shall not be interrupted during construction. Make arrangements with harbour management to facilitate the execution of work.
- .6 The work area reserved for the Contractor must necessarily be secured in accordance with paragraph 1.2.1.1 above.
- .7 Install traffic signs, in accordance with paragraph 1.2.1.2.
- .8 Obtain and pay for use of additional storage or work areas needed for operations under this Contract. No storage of construction materials will be permitted in the harbour.
- .9 The washing of concrete mixers shall be performed outside the wharf. Do not discharge concrete into the water or on rock covered surfaces.
- .10 Prevent damage to portions of existing work which remain.
- .11 Proceed to final cleanup at completion of operations.

1.6 OCCUPANCY BY THE DEPARTMENTAL REPRESENTATIVE

- .1 The Departmental Representative will occupy premises during entire construction period.
- .2 Co-operate with the Departmental Representative in scheduling operations to minimize conflict and to facilitate the Departmental Representative usage.

1.7 SITE INSPECTION

- .1 Prior to forwarding his tender, the Contractor should visit the location, take stock of existing conditions and examine any other aspect likely to affect the cost of the work. Ignorance of site conditions shall in no circumstance constitute a just cause to claim additional payment.

1.8 GUARD RAILS, FENCES AND SIGNAGE

- .1 The commercial wharf in Matane is used intensively. The safety of users and workers remains a priority during work repairs. In addition to the contractor's safety perimeter, provide and implement New Jersey type concrete barriers, fences and hoarding, railings and rigid safety barriers for the duration of the work around areas regarded as dangerous.
- .2 Signage should be light-reflective and visible at night.
- .3 Supply and install these safety features as required by the authorities having jurisdiction.

1.9 REQUIRED DOCUMENTS

- .1 Maintain at job site one copy each document as follows:
 - .1 Contract drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Reviewed shop drawings.
 - .5 List of outstanding shop drawings.
 - .6 Change orders.
 - .7 Other modifications to Contract.
 - .8 Field test reports.
 - .9 Copy of approved Work Schedule.
 - .10 Health and Safety Plan and other safety related documents.
 - .11 Other documents as specified.

PART 2 – PRODUCTS**2.1 Not Used**

- .1 Not used.

PART 3 – EXECUTION**3.1 Not Used**

- .1 Not used.

END OF SECTION

PART 1 – GENERAL

1.1 Related Sections

- .1 Section 01 51 00 – Temporary utilities
- .2 Section 01 52 00 – Construction facilities
- .3 Section 01 56 00 – Temporary barriers and enclosure

1.2 ACCESS AND EGRESS

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

1.3 USE OF SITE AND FACILITIES

- .1 Transportation by boat or truck must not be disturbed by the presence of Contractor.
- .2 Merchandise transportation on a part of wharf and harbour traffic must stay ongoing during Contractor's work. Boat transportation will not be stopped during works. Take any necessary arrangements with Port Director to ease works execution.

1.4 EXISTING SERVICES

- .1 Provide for safe personnel, pedestrian and vehicular traffic.
- .2 Notify Departmental Representative and site occupants of intended interruption of services and obtain required permission.
- .3 Maintain in function existing public services and ensure work site access to users and vehicles.
- .4 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. Keep duration of interruptions minimum. Carry out interruptions after normal working hours of occupants.
- .5 Matane commercial wharf is a place where takes place an important heavy traffic. Elaborate alternative traffic options for users and vehicles, if required.
- .6 During ship loading or transshipment activities maintain access to and safety of traffic lanes.

1.5 REQUIREMENTS RELATING TO THE STRUCTURAL CONDITION OF THE COMMERCIAL WHARF

- .1 Both the Matane commercial wharf and spur wharf were built in the late 1960s. It is a structure of steel piles underpinning composite steel and concrete beams. A two-way reinforced concrete slab 250 mm thick was cast onto the beams. In 2013, a 150 mm thick concrete overlay was cast on the existing slab. In 2013 and 2014, extensive repair to concrete beams was carried out. The commercial wharf is fitted with a cathodic protection system.
- .2 Several analyzes show that the concrete in the existing commercial wharf slab is subject to chloride ion attack. Alkali-aggregate reactions are active in the concrete elements and result in visible cracking. The permissible surcharge loading of the commercial wharf slab is currently 24 kPa.
- .3 The concrete slab on the commercial wharf, in the area bounded by axes 39 to 42 and A to C axes, is at the same elevation as the slab on the spur wharf. The slab is topped with a 150 mm reinforced concrete overlay placed in 2013, and composed of 1 000 mm granular backfill and a 75 mm thick asphalt concrete layer. In this area, due to the overloading of the granular fill, it is strictly forbidden to place equipment, machinery or vehicles. In this area, the permissible surcharge loading is 0 kPa. Only workers may access this area which is clearly outlined on the drawings.
- .4 The ladders, bollards and fenders on the commercial wharf are in good condition.

1.6 SPECIAL REQUIREMENTS RELATING TO THE USE OF THE MOORING BOLLARDS B-12 AND B-13 SOUTH OF THE COMMERCIAL WHARF

- .1 The mooring bollards B-12 and B-13 located south of the commercial wharf are within the Contractor's security perimeter. These bollards are of paramount importance for the safe tie-down of ships at berth.
- .2 Wherever possible and depending on the nature and location of construction work carried out in the vicinity of the bollard, the Contractor is kindly asked to exercise reasonable diligence in order to allow safe use of the mooring bollards by the users of the commercial wharf.
- .3 Should the Contractor accept that users make use of these mooring bollards, a written authorization must be provided to the Departmental Representative. The procedure and conditions for using these mooring bollards will also be included in the Contractor's health and safety plan.
- .4 Where the Contractor prohibits the use of the mooring bollards B-12 and B-13 by the users, an official letter must be written and sent to the Departmental Representative. This letter should detail the reasons and conditions for refusal including a work schedule specifying the periods during which the mooring bollards will not be accessible to the users. The Contractor's refusal letter must be sent to Departmental Representative at the outset of construction and the schedule updated weekly as mentioned in the section 01 30 00 – Submittal Procedures.

- .5 Contractor shall at all times retain the control over health and safety. He is therefore exclusively responsible for allowing or denying user access to the mooring bollards.

1.7 SPECIFIC REQUIREMENTS

- .1 Ensure that Contractor members who works on construction site know and respect regulations on fire security, road traffic and work security.
- .2 Stay in the works and access limits.
- .3 The Contractor's construction work has precedence over the unloading activities of the wharf users. However, in order to facilitate the unloading of ships, the Contractor shall at all times establish his work plan based on traffic to the wharf. The Contractor should confer daily with port management and the various users of the wharf for arrivals and departures of ships. For information on traffic forecasts and the likely duration of berthings, please contact the Matane harbour master.
- .4 The planned schedule and frequency of ship visits are known approximately one (1) month in advance. However, the exact timetable of visits is available only a week in advance. In addition, the schedule of ships can be swayed by a number of factors beyond the control of Departmental Representative. The Contractor shall therefore coordinate with the users of the commercial wharf and the harbour master every Friday to confirm an effective work schedule.
- .5 In his bid the Contractor should carefully weigh all costs pertaining to loss of productivity involved with arriving vessels and ongoing harbour activity.
- .6 The commercial wharf is occasionally used for the transshipment of petroleum products. During these periods, no work will be permitted on, under and around the commercial wharf and spur. The Contractor shall coordinate its work schedule according to the arrival of ships.
- .7 The commercial wharf may exceptionally be used to attend vessels in difficulty or to handle emergencies. Should this occur, the Contractor will be immediately be directed what to do by the Departmental Representative.
- .8 Ships and activities likely to disrupt the Contractor's work schedule are the following (this list is not complete or final):

Type of ship / activity	Approximate frequency	Impact on the work
Oil tanker	1 ship every 2-3 months	Complete shutdown of work site for up to 72 hours. Contractor to cease activities and evacuate the site during this period.
Pulp & paper, wind turbines, bulk and/or other ships	Duration: 48 h @ 72 h by boat 3-6 ships per month	The surface of the commercial wharf and the access routes must be free of debris. Possible use of the mooring bollards near commercial wharf. Presence of heavy vehicles on the wharf during unloading operations. Certain type of works (welding, diving etc.) may require Captain authorization. Piling and concrete demolition may not be authorized while boats are at berth along the wharf.

.9 Waiting time:

- .1 Waiting time is defined as the period of time during which the Contractor is forced to stop construction activities due to the arrival of a tanker. In the bid form, this item is payable at a 'per day' rate (or shift).
- .2 Contractor to demonstrate that he was unable to work for a minimum of eight (8) consecutive hours during normal working hours as scheduled in his timetable of the week, i.e., Monday to Friday from 6 am to 6 pm. No waiting time will be accounted for work on Saturday and Sunday, even if the work was planned in the schedule provided by the Contractor.
- .3 No waiting time will be paid if the down time period was less than 8 consecutive hours. Missed hours straddling two shifts may not be combined.
- .4 No payment for waiting time will be made to the Contractor if the latter has not provided his work schedule on the agreed date, i.e., every Friday at 5 pm.
- .5 No payment for waiting time will be made to the Contractor if the latter does not systematically comply with his planned schedule.
- .6 Contractor will not be paid waiting time for occurrences involving unloading of pulp & paper, wind mills, etc. However, should a particular situation arise where a complete cessation of construction work is required, the Departmental Representative may allocate to the Contractor a one-day waiting time period.

- .7 Ensure that the Contractor's personnel and staff working on site are aware of the fire safety, road traffic and occupational safety regulations and comply with such regulations.
- .8 Contractor to remain within the boundaries of the work area and access roads.

1.8 REQUIREMENTS RELATING TO THE Navigable Waters Protection Act

- .1 The Contractor shall ensure the issuance of Notices to Shipping (NOTSHIP), minimum forty-eight hours (48 h) before the start of maritime works and provide update on the operations or when aids to navigation fail, to the attention of:

Canadian Coast Guard, Notices to Shipping Bureau - Les Escoumins MCTS,
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 the ships, the vessels used, equipment, work procedures, as well as work schedules and milestones;
 - .2 The characteristics of navigational aids as well as installation and removal dates of permanent or temporary aids to navigation;
 - .3 Any unforeseen situation, changes to the approved plans or requirements, which may affect the safety of mariners;
 - .4 Inform of any relocation or defective temporary navigation aids.
- .3 The Contractor shall 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."
- .4 At work completion the Contractor shall:
 - .1 Remove all equipment and temporary structures in order to restore the seabed to its original condition with respect to slope, bathymetry and granulometry;
 - .2 Inform Departmental Representative of completion date;
 - .3 Ensure the compliance of the project with other information appearing on the approved documents and submit new revised "as built" drawings showing all changes to the structures;
 - .4 Ensure that no equipment, materials or debris from work are left behind in the navigable waterway;
 - .5 The Contractor shall ensure the bathymetry in the maneuvering area (held area) and, where necessary, restore the bathymetry and slopes along the area to ensure the safety of commercial vessels;
 - .6 Where the structures or the seabed or parts thereof within the work area undergo significant displacement relative to the approved position or due to the collapse of the slopes along the ships maneuvering area, the Contractor shall immediately ensure the issuance of notices to navigation describing the situation, and remove or restore as expeditiously as possible the materials to the approved position or dispose of them at a site approved by the Departmental Representative. The Contractor shall remove from

the waterway all materials that do not comply with the authorisation issued under the Navigation Protection Act.

1.9 SECURITY

- .1 Elaborate temporary procedures to maintain security if it has been reduced related to works.
- .2 Security authorizations:
 - .1 All members required for the present works might be submitted to security controls.
 - .2 Obtain required authorizations, for any people who has to enter the works limits.
- .3 The Matane commercial harbour is accessed through an automated gate. In order to access the site, the Contractor shall provide the Departmental Representative with the list of employees one week before the start of work. Workers will be given an access code.
- .4 During ship unloading operations, a commissioner attends the gatehouse. Workers will need to identify themselves before entering the site.
- .5 The maximum speed limit on the access road to the spur wharf is 30 km/h.
- .6 The concrete slab of the commercial wharf and all access roads to the harbour outside of the work area reserved to the Contractor must be kept clean and free of debris at all times. The Contractor is responsible for cleaning all these surfaces.

1.10 INTERFERENCE TO NAVIGATION

- .1 Whether work is carried out by means of marine equipment (floating) or from land and work is performed below the high water mark, the Contractor shall seek and obtain all required information concerning boat traffic and fishing activities in the construction area. Design and execute the work in such way as to prevent interfering with commercial and fishing activities or limiting the access to harbour facilities by either land or sea.
- .2 Contractor is responsible of loss of time, materials, equipment or any other fees due to boats at berth or in displacement in the harbour and of any other impacts due to his works.
- .3 In addition, the Contractor shall report all travels of his floating equipment to the Departmental Representative and to the Matane harbour master, Mr. Jean Pierre Harisson, 418 566-7152.
- .4 The Contractor shall accurately and on regular basis report all travels (movement, relocation) of his floating equipment to the Canadian Coast Guard Marine Communications and Traffic Services Centre (Québec City MCTS 418 648-7459). As well, the Contractor shall inform MCTS of all the construction periods start and finish times.
- .5 In a case where the contractor is responsible of an obstacle to shipping, he must:

- .1 Notify the harbour Master and the Departmental Representative;
 - .2 Remove without delay the equipment at its own fee.
- .6 If contractor do not follow this obligation, Departmental Representative will proceed to obstacle removal and all fees will be charged to the Contractor.

1.11 INVASIVE SPECIES

- .1 For equipment that have been cleaned and were stored on land just before the inception of work, the Contractor needs only obliged to provide, in writing to the Departmental Representative only needs to provide, in writing, a list of this equipment, their storage location and the proposed launch date. Departmental Representative must be able to verify whether the equipment was clean and actually stored on land before work is undertaken.
- .2 Where equipment is already in the water, the Contractor shall demonstrate at own cost that the floating equipment is free of invasive allogenic species at time of mobilization to the work site. Just before mobilization, the Contractor shall submit a written inspection report certifying that the equipment is free of invasive species. The report shall be prepared by a qualified biologist, specialised in the identification of benthic fauna; the sampling shall be carried out by divers. The report shall include, without limitation, a list of the equipment inspected (tugboats, scows, etc.), date and place of inspection, a short description of the sampling method and identification process, a list of the samples taken, the results in table form, and a statement concerning the presence or lack of such species. Report to include photographs and bear the signature of a qualified biologist before it is submitted to the Departmental Representative with the other contract documents required, before the equipment is mobilised on the work site.
- .3 Should the inspection report confirm the presence of invasive species, the Contractor shall replace the equipment or proceed at own cost to a thorough cleaning of the equipment. A description of the cleaning measures shall be included in a new post-cleaning inspection report, along with all the above-mentioned information.
- .4 The Departmental Representative reserves the right at any time to obtain a second opinion. Where invasive species are observed, the Contractor shall interrupt the activities and proceed at own cost to the cleaning of the equipment concerned and follow the above-mentioned procedure.

1.12 FLOATING EQUIPMENT

- .1 The Contractor shall provide equipment of sufficient size and capacity to perform the Work.
- .2 For each floating equipment to be used in the work, a compliance certificate shall be supplied to Departmental Representative before work is undertaken (cf. Section 01 35 29.06 – Health and Safety Requirements).

- .3 All plant and equipment must be maintained in good repair and seaworthy condition throughout the duration of the Contract. Any required maintenance and repair work shall be completed promptly. By their dimensions, characteristics and draft, the equipment shall be appropriate to complete the work.
 - .1 Mark floating equipment with lights/daymarks in accordance with the Canada Shipping Act.
 - .2 Maintain radio watch on board.
 - .3 Keep all signals and lights required to be installed on all floating equipment required for the work in accordance with the Collision Regulations and the Navigation Safety Regulations. All equipment required for the work shall be properly identified and/or visible at all times.

PART 2 – PRODUCTS

2.1 Not Used

- .1 Not Used.

PART 3 – EXECUTION

3.1 Not Used

- .1 Not Used.

END OF SECTION

PART 1 – GENERAL

1.1 MEASUREMENT FOR PAYMENT

- .1 The supply of materials, labour, tools, equipment, protection, transportation, administrative expenses, profit, financing, etc., required to execute the work of this contract are included in each of the following items.
- .2 Items subject to a global unit must be ventilated and submitted in a 48 hours delay following the demand to contracting authority before awarding the contract or submitted to the Departmental Representative within two weeks of notification of acceptance of the tender as the case may be.
- .3 The method for measuring the categories of labour, equipment or materials of this Work is as follows:

Item no. 1 – Mobilization and demobilization

- .1 This item is measured on a global unit and includes the installation of a construction trailer, sanitary facilities for the workers, the installation of barriers to fence off the work area reserved for the Contractor, and the mobilization of workers and equipment to the site. It includes all the elements required for the mobilization and demobilization of the contractor.

Item no. 2 – Worksite Organization

- .1 This item is measured as a global unit. It includes all the elements of Division 01, as well as all elements not described in any other item and that could be required to complete works.
- .2 The site organization during the work is paid in proportion to the monthly estimates of work.

Item no. 3 – Demolition

- .1 This item is measured as a global unit and includes all works required for the demolition and dismantling, as required on plans and technical specifications. Also included in this item are the costs for transporting and disposing at an authorized site the materials which cannot be reused on the site and demolition materials.
- .2 More specifically, this item includes, without limitation, ladder and bollard B-11 dismantling, partial pavement, concrete and pile demolition.
- .3 This item will be divided as follows:
 - .1 Ladder dismantling
 - .2 Existing bollard dismantling
 - .3 Pavement demolition
 - .4 Concrete demolition
 - .5 Existing pile demolition

Item no. 4 – Concrete for massif support

- .1 Concrete is measured in theoretical cubic meter, as indicated on plans. It includes equipment, labour, supply, transportation and installation of concrete, cement, aggregates, reinforcement, anchors, embedded steel assemblies, additives and formwork. No volume deduction will be made for reinforcement.
- .2 Water heating, aggregates heating or concrete cooling if required are included under this item.
- .3 Precaution measures taken to protect the concrete in cold or hot weather are included under this item.
- .4 Studs installation in existing concrete are included in this item.
- .5 Concrete in piles are included in item 5.1 – Piles supplying.

Item no. 5 – Piles

- .1 Piles supplying is measured in pile linear meter, excluding cap. Pile installation is measured in unit of pile.
- .2 Concrete filling and reinforcement are included in this item. Concrete supplying and installation are measured in pile linear meter. Reinforcement supplying and installation is measured in pile unit.
- .3 Contractor must consider a 22 meters theoretical length per pile in its bidding. If adjustments are required on site, they will be paid/credited related to linear price of pile supplying as in tender form.
- .4 Cap is included in this item. Cap supplying and installation are measured by unit.
- .5 Rip rap temporary removal, if required, is included in this item (pile installation). Also its reinstallation.
- .6 Pile joint, if required, is included in this item. This will be paid globally. If a joint is necessary, it will be paid as the unit price in tender form.
- .7 Weldings, cushions and other equipment required are included in this item.
- .8 Piles cutting to reach elevations as on plans are included in this item.
- .9 This item is divided as follows:
 - .1 Pile supplying (including concrete)
 - .2 Pile installation (including reinforcement)
 - .3 Pile cap
 - .4 Pile joint

Item no. 6 – Bituminous pavement

- .1 This item is measured as a global unit installed within the limits specified in plans. It includes materials, labor and equipment required for the installation of pavement.

Item no. 7 – Ladders

- .1 This item is measured as a global unit. It includes materials and equipment required for the installation of ladders.
- .2 Supply and installation of all hardware and required steel for a complete installation are part of this item.

Item no. 8 – Bollard

- .1 This item is measured as a global unit. It includes materials and equipment required for the installation of bollard.
- .2 All hardware and non-shrink grout required for a complete installation are included in this item.
- .3 Surface preparation and painting is included in this item.
- .4 Concrete for the bollard base is included in item 4 – Concrete for massif support

Item no. 9 – Waiting time:

1. This item is measured per work shift lost due to the maneuvering or presence of ships at berth during scheduled work periods in accordance with Section 01 14 00 – Work Restrictions.
2. In order to receive payment, the Contractor must demonstrate that due to loading or transshipment activities, he had to cease operations for the eight (8) consecutive hours of a full shift (day or evening) and that this shift was included in his weekly schedule. Failure to abide by the timetable will automatically result in rejection of the waiting time payment request.
3. The price must therefore include all costs related to waiting time (labor, equipment, etc.) incurred during the suspension of work.

1.2 FINAL PAYMENT

- .1 Submit application for final payment when Work is deemed completed.
- .2 Departmental Representative will, no later than five (5) days after receipt of application for final payment, review Work to verify validity of application. Departmental Representative will give notification that application is valid or give reasons why it is not valid, no later than five (5) days after reviewing Work.
- .3 Departmental Representative will issue final certificate for payment when application for final payment is found valid.

PART 2 – PRODUCTS

2.1 Not used

- .1 Not Used.

PART 3 – EXECUTION

3.1 Not used

- .1 Not Used.

END OF SECTION

PART 1 – GENERAL**1.1 Section content**

- .1 Inspection and testing by inspection firms or laboratory as designated by the Department Representative.

1.2 Appointment and payment

- .1 Departmental Representative will appoint and pay for services of testing laboratory except follows:
 - .1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.
 - .2 Inspection and testing performed exclusively for Contractor's convenience.
 - .3 Testing, adjustment and balancing of conveying systems, mechanical and electrical equipment and systems.
 - .4 Mill tests and certificates of compliance.
 - .5 Tests specified to be carried out by Contractor under supervision of the Departmental Representative.
 - .6 Additional tests as specified.
- .2 Where tests or inspections by designated testing laboratory reveal Work not in accordance with contract requirements, the Contractor is to pay costs for additional tests or inspections as required by the Departmental Representative to verify acceptability of corrected work.

1.3 Contractor's responsibilities

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

PART 2 – PRODUCTS

2.1 Not used

.1 Not Used.

PART 3 – EXECUTION

3.1 Not used

.1 Not Used.

END OF SECTION

PART 1 – GENERAL

1.1 Definitions

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

1.2 Requirements

- .1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.
- .2 Plan to complete Work in accordance with prescribed milestones and time frame.
- .3 Limit activity durations to maximum of approximately 10 working days, to allow for progress reporting.

- .4 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

1.3 Action and informational submittals

- .1 Submit to the Departmental Representative within five (5) working days of Tender acceptance, an Execution Calendar describing the planification and work following on the first 4 piles.
- .2 Submit to the Departmental Representative within five (5) working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.
- .3 Submit Project Schedule of all other works to the Departmental Representative within five (5) working days of receipt of acceptance of Master Plan.

1.4 Project milestones

- .1 Work shall be completed as mentioned in the SA06 article of the Tender Documents.

1.5 Master plan

- .1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).
- .2 The Consultant will review and return revised schedules within four (4) working days.
- .3 Revise impractical schedule and resubmit within three (3) working days.
- .4 Accepted revised schedule will become the Master Plan and be used as baseline for updates.

1.6 Project schedule

- .1 Develop a detailed Project Schedule derived from Master Plan.
- .2 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:
 - .1 Award.
 - .2 Shop Drawings, Samples.
 - .3 Mobilization.
 - .4 Concrete Demolition
 - .5 Existing pile demolition
 - .6 Excavation and backfilling (if required)

- .7 Material delivery
- .8 Pile driving.
- .9 Massif Concrete construction
- .10 Wharf accessories: bollard, ladder.
- .11 New Asphalt.
- .12 Demobilization.

1.7 Project schedule reporting

- .1 Update Project Schedule on a weekly basis, at latest Friday 17:00 hr reflecting activity changes and completions, as well as activities in progress.
- .2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

1.8 Project meetings

- .1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.
- .2 Weather related delays with their remedial measures will be discussed and negotiated.

PART 2 – PRODUCTS

2.1 Not used

- .1 Not used.

PART 3 – EXECUTION

3.1 Not used

- .1 Not used.

END OF SECTION

PART 1 – GENERAL**1.1 Related requirements**

- .1 Section 01 45 00 – Quality control.

1.2 Administrative

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

1.3 Shop drawings and product data

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 Shop drawing of regarding structural items which are different of plans indications or related to Contractor's method of work must be signed and sealed of an Engineer member of OIQ. Departmental Representative will be the only authority to determine which shop drawing requires a seal and signature.

- .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 coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .4 Allow five (5) days for Departmental Representative's review of each submission.
- .5 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .6 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
- .7 Submissions include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 The title of each drawing, technical sheet and samples and the number submitted;
 - .5 Any other required information.
 - .6 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 7. Details of appropriate portions of Work as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
 - .3 Setting or erection details.
 - .4 Capacities.
 - .5 Performance characteristics.
 - .6 Standards.
 - .7 Operating weight.
 - .8 Wiring diagrams.
 - .9 Single line and schematic diagrams.
 - .10 Relationship to adjacent work.
- .8 After Departmental Representative's review, distribute copies.
- .9 It is possible that the Departmental Representative requires that some shop drawings be sealed and signed by a member of the l'Ordre des Ingénieurs du Québec (OIQ). The Contractor shall comply to this requirement and assume the related expenses.

- .10 Submit copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.
- .11 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .12 Submit certificates mentioned in the technical specifications and required by the Departmental Representative. Certificates must mention a date that is later than the contract award and the project title.
- .13 Submit manufacturer instructions mentioned in the technical specifications and required by the Departmental Representative.
- .14 Delete information not applicable to project.
- .15 Supplement standard information to provide details applicable to project.
- .16 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, one copy will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- .17 The review of shop drawings by the Departmental Representative is for sole purpose of ascertaining conformance with general concept. 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 requirements of construction and Contract Documents. Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

1.4 Samples

- .1 Submit for review samples as requested in respective specification Sections. Label samples with origin and intended use.
- .2 Deliver samples prepaid to Departmental Representative.
- .3 Notify Departmental Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.
- .4 Where colour, pattern or texture is criterion, submit full range of samples.
- .5 Adjustments made on samples by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.

- .6 Make changes in samples which Departmental Representative may require, consistent with Contract Documents.
- .7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.5 Mock-ups

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

1.6 Certificates and transcripts

- .1 Immediately after award of Contract, submit Workers' Compensation Board status.
- .2 Submit transcription of insurance immediately after Tender acceptance Notice.

1.7 Photographic documentation

- .1 Realize a photographic survey of the existing structure prior of the beginning of works and submit prior to works one (1) copy of numerical pictures file on electronic device. Number of pictures and number of point of vues are decided by Contractor. However, the survey must cover the entire working area.
- .2 The photographic survey could be replaced by a photo survey videotaped in High Definition 1080i or equivalent.
- .3 All along works, Contractor must take pictures or video of working progress. These pictures must be transmitted to Departmental Representative as the works progress.

PART 2 – PRODUCTS

2.1 Not used

- .1 Not Used.

PART 3 – EXECUTION

3.1 Not used

- .1 Not Used.

END OF SECTION

PART 1 – GENERAL

1.1 Section content

- .1 Operations shall be managed so that the safety and security of the public and of site workers always take precedence over cost and scheduling considerations.

1.2 Related section

- .1 Section 01 33 00 – Submittal Procedures.

1.3 References

- .1 Canada Labour Code - Part II, Canadian Occupational Safety and Health Regulations
- .2 Canadian Standards Association (CAN/CSA)
- .3 Canadian General Standards Board (CAN/CGSB)
- .4 Workplace Hazardous Materials Information System (WHMIS)
- .5 Occupational Health and Safety Act, R.S.Q. Chapter S-2.1
- .6 Construction Safety Code, S-2.1, r.6

1.4 Submittals

- .1 Submit the documents required according to section 01 33 00 – Submittal Procedures.
- .2 Submit to Departmental Representative, the “Commission de la santé et de la sécurité au travail” and the “Association paritaire en santé et sécurité du secteur de la construction” (ASP Construction the site-specific safety program, as outlined in Clause 1.9.2 at least 30 days prior to start of work. The Contractor must review his program during the course of the project if any change occurs in work methods or site conditions. The Departmental Representative may, after receiving the program or at any time during the project, ask the Contractor to update or modify the program in order to better reflect the actual conditions or activities at the construction site. The Contractor must make the required changes before work begins.
- .3 Submit to Departmental Representative the site inspection sheet, duly completed weekly.
- .4 Submit to Departmental Representative within 24 hours a copy of any inspection report, correction notice or recommendation issued by federal or provincial inspectors.
- .5 Submit to Departmental Representative within 24 hours an investigation report for any accident involving injury and any incident exposing a potential hazard.

- .6 Submit to Departmental Representative all safety data sheets for hazardous materials to be used at the site at least 3 days before they are to be used.
- .7 Submit to Departmental Representative copies of all training certificates required for application of the safety program, in particular:
 - .1 General construction site safety and health courses;
 - .2 Safety officer attestations;
 - .3 First aid in the workplace and cardiopulmonary resuscitation;
 - .4 Work in confined spaces;
 - .5 Lockout procedures;
 - .6 Wearing and fitting of individual protective gear;
 - .7 Forklift truck;
 - .8 Positioning platform;
 - .9 Work near water with drowning risk;
 - .10 Work involving third party;
 - .11 Any other training required by regulations or safety programs.
- .8 Medical examinations: Wherever legislation, regulations, directives, specification or a safety program require medical examinations, Contractor must:
 - .1 Prior to start-up, submit to Departmental Representative certificates of medical examination for all concerned supervisory staff and employees who will be on duty when the site opens.
 - .2 Thereafter, submit without delay certificates of medical examination for any newly hired concerned personnel as and when they start work at the site.
- .9 Emergency plan: The emergency plan, as defined in 1.9.3, shall be submitted to Departmental Representative at the same time as the site-specific safety program.
- .10 Notice of site opening: Notice of site opening shall be submitted to the “Commission de la santé et de la sécurité au travail” (CNESST) before work begins. A copy of such notice shall be submitted to Departmental Representative at the same time and another posted in full view at the site. During demobilization, a notice of site closing shall be submitted to the CNESST, with copy to Departmental Representative.
- .11 Permits: Obtain all required municipal, provincial and federal permits according to contractual clauses. Send a copy of each permit request and each permit to Departmental Representative without delay.
- .12 Plans and certificates of compliance: Submit to the CNESST and to Engineer a copy signed and sealed by an engineer of all plans and certificates of compliance required pursuant to the Construction Safety Code (S 2.1, r. 6), or by any other legislation or regulation or by any other clause in the specifications or in this contract. Copies of these documents must be on hand at the site at all times.
- .13 Certificate of compliance delivered by the CNESST: The certificate of compliance is a document delivered by the CNESST confirming that the Contractor is acting in accordance with the CNESST, i.e. that he has paid out all the benefits concerning this contract. This document must be delivered to the Departmental Representative at the end of the work.

- .14 Submit to Departmental Representative conformity certificates from Transport Canada for the approval of all type of boats (transport, barges, safety boats, etc.) used by the Contractor to the Departmental Representative before work mobilization.

1.5 Hazards assessment

- .1 Identify all hazards inherent in each task to be carried out at the site.
- .2 Plan and organize work so as to eliminate hazards at source or promote mutual protection so that reliance on individual protective gear can be kept to a minimum. Where individual protection against falling is required, workers shall use safety harness that meets standard CAN/CSA- Z-259.10 - M90. Safety belts shall not be used as protection against falling.
- .3 Equipment, tools and protective gear which cannot be installed, fitted or used without compromising the health or safety of workers or the public, shall be deemed inadequate for the work to be executed.
- .4 All mechanical equipment shall be inspected before delivery to the site. Before using any mechanical equipment, submit to Departmental Representative a certificate of compliance signed by a qualified mechanic. Whenever he suspects a defect or accident risk, Departmental Representative may at any time order the immediate shut-down of equipment and require a new inspection by a specialist of his own choosing.

1.6 Meetings

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

1.7 Legal and regulatory requirements

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

1.8 Site/implementation conditions

- .1 Contractor must take into account, in its planification, of permissible live loads on commercial wharf, and also of loads restrictions near damaged pile.
- .2 Personnel in charge of works on work-site are exposed to the following elements:
 - .1 Works close to a water course;
 - .2 Works implying drowning hazards;
 - .3 Works implying falling out hazards;
 - .4 Works in closed spaces as described in Canada Occupational Health and Safety Regulations, article 11.1, Part II.
- .3 At the site, take account of the following specific conditions:
 - .1 The weather conditions may be difficult, including the possibility of strong winds, waves, cold temperatures and large moving ice floes;
 - .2 Maintain the continuity of various services in a safe manner throughout the duration of the works.
- .4 Structures protection as works progress to ensure labour safety and structure stability until final acceptance is at Contractor responsibility.
- .5 As the works safety responsible, Contractor must put in place all the requirements to ensure workers safety and wharf users in those areas: establishment of a circulation plan, signalization. The security measures planning must be included in the Prevention program required in the technical specifications.
- .6 During works, the Contractor will have to proceed to modify any situation if construction works lead to risks for wharf users or, at the opposite, if the vehicle traffic from the wharf users leads to risks for the workers.

1.9 Safety and health management

- .1 Acknowledge and assume all the tasks and obligations which customarily devolve upon a principal Contractor under the terms of the Occupational Health and Safety Act (R.S.Q., chapter S-2.1) and the Construction Safety Code (S-2.1, r.6).
- .2 Develop a site-specific safety program based on the hazards identified and apply it from the start of project work until close-out is completed. The safety program must take account of all information appearing in 1.8 and must be submitted to all parties concerned, in accordance with the provisions set forth in 1.4. At a minimum, the site-specific safety program must include:
 - .1 Company safety and health policy;
 - .2 A description of the work, total costs, schedule and projected workforce curve;
 - .3 Flow chart of safety and health responsibility;
 - .4 The physical and material layout of the site;
 - .5 First-aid and first-line treatment standards;
 - .6 Identification of site-specific hazards;

- .7 Risk assessment for the tasks to be carried out, including preventive measures and the procedures for applying them;
 - .8 Training requirements;
 - .9 Procedures in case of accident/injury;
 - .10 Written commitment from all parties to comply with the prevention program;
 - .11 Scheduled site inspection based on the preventive measures.
- .3 The Contractor must draw up an effective emergency plan based on the characteristics and constraints of the site and its surroundings. Submit the emergency plan to all parties concerned, pursuant to the provisions of 1.4. The emergency plan must include:
- .1 Complete evacuation procedure, including planned means to evacuate personnel inside caissons cells, if required;
 - .2 Identification of resources (police, firefighters, ambulance services, etc.);
 - .3 Identification of persons in charge at the site;
 - .4 Identification of those with first-aid training;
 - .5 Training required for those responsible for applying the plan;
 - .6 Any other information needed, in the light of the site characteristics.
- .4 For all works implying falling out hazards, comply with the following requirements:
- .1 The Contractor shall ensure all workers exposed to fall out hazard of more than 2.4 m are protected against falling.
 - .2 Plan and organize works in order to help eliminating dangers or to ensure collective protection and thus reduce individual protection equipment needs to a minimum. When individual protection to avoid falling is required, workers must use a security harness in compliance with CAN-CSA-Z-259.10-M90. A safety belt shall not be used as protection to avoid falling.
 - .3 Wearing a safety harness is obligatory on all elevating platform with telescoping mast, articulated or swivel.
 - .4 Define danger zones every places where equipment for working in height is required.
 - .5 As principal contractor, the Contractor will comply with requirements of Canada Occupational Health and Safety Regulations, part XI, for works accomplished in closed spaces.

1.10 Responsibilities

- .1 No matter the size of the construction site or how many workers are present at the workplace, designate a competent person to supervise and take responsibility for health and safety. Take all necessary measures to ensure the health and safety of persons and property at or in the immediate vicinity of the site and are affected by the course of works.
- .2 Take all necessary measures to ensure application of and compliance with the safety and health requirements of the Contract Documents, applicable Federal and Provincial regulations and standards as well as the site-specific safety program, complying without delay with any order or correction notice issued by the “Commission de la santé et de la sécurité au travail (CNESST)”.
- .3 Take all necessary measures to keep the site clean and in good order throughout the course of the work.

1.11 Communications and posting

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

1.12 Unforeseen circumstances

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

1.13 Inspection of site and correction of hazardous situations

- .1 Inspect the work site and complete the site inspection sheet at least once a week.
- .2 Immediately take all necessary measures to correct any lapses from legislative or regulatory requirements and any hazards identified by a government inspector, by the Departmental Representative, by the site safety and health coordinator or during routine inspections.
- .3 Submit to Departmental Representative written confirmation of all measures taken to correct lapses and hazardous situations.
- .4 Give the safety officer or, where there is no safety officer, the person assigned to safety and health responsibilities, full authority to order interruption and resuming of work as and when deemed necessary or desirable in the interests of safety and health. Act always so that the safety and

health of the public and site workers and environmental protection take precedence over cost and scheduling considerations.

- .5 Without limiting the scope of sections 1.9 and 1.10, Departmental Representative may order cessation of work if, in his/her view, there is any hazard or threat to the safety or health of site workers or the public or to the environment.

1.14 Blasting

- .1 Blasting and other use of explosives are forbidden unless authorized in writing by Departmental Representative

1.15 Powder actuated devices

- .1 Use powder actuated devices only after receipt of written permission from Departmental Representative.
- .2 Any person using a powder actuated device must hold a training certificate and comply with all the requirements of section 7 of the Safety Code for the construction industry (S-2.1, r. 6).
- .3 Any other cartridge device must be used according to the manufacturer's instructions and according to applicable standards and regulations.

1.16 Hot work

- .1 Hot work means any work where a flame is used or a source of ignition may be produced, i.e., riveting, welding, cutting, grinding, burning and heating.
- .2 Before work begins, obtain the "Hot Work Permit" of PWGSC (ELF 102) completed by the Manager in Charge of Worksite when the duties to be undertaken involve hot work.
- .3 Work on construction sites must be carried out in compliance with Fire Commissioner of Canada Standard CI 301, Standard for Construction Operations, June 1982.
- .4 A working portable fire extinguisher suitable to the fire risk shall be available and easily accessible within a 5 m radius from any flame, spark source or intense heat.
- .5 An individual shall be appointed to go on rounds (fire) for a period of 30 minutes after the end of the shift. This individual shall countersign the permit and give it to the person in charge of the work site (or the individual he/she appoints) after the 30 minutes period.

- .6 The storage of propane cylinders shall comply with the CAN/CSA-B149.2-F00 Propane Storage and Handling Code and meet the specific conditions outlined in this document. The cylinders shall be stored outdoors, in a safe place, away from any unauthorized handling, in a storage cabinet specially designed for this purpose. The cylinders shall be securely kept upright and locked at all times in a place where no vehicles are allowed, unless the cylinders are protected by bars or the equivalent.
- .7 All of the cylinders used or stored on the work site shall be equipped with a collar designed to protect the valve.
- .8 Filling the cylinders on the work site is forbidden, unless a procedure compliant with the CAN/CSA B149.2 standard is approved and authorized by the Engineer.

1.17 Welding and cutting

Note: For welding and cutting activities, make sure that the following conditions are met in addition to the ones mentioned above.

- .1 The works must be carried out in accordance with the articles “3.13 Compressed gas supply” and “3.14 Welding and cutting” of the Safety Code for the construction industry, S-2.1, r. 6.
- .2 Work on construction sites must be carried out in compliance with Fire Commissioner of Canada Standard CI 302, Standard for Welding and Cutting, May 1979.
- .3 Welding and cutting devices are excessively dangerous with regard to fire risk. The following precautions must be taken at the time of this type of work:
 - .1 Store all compressed gas cylinders on fireproof fabrics and make sure that the room is well ventilated.
 - .2 Store all oxygen cylinders more than 6 meters from a flammable gas cylinder (ex: acetylene) or a combustible such as oil or grease, unless the oxygen cylinder is separated from it by a wall made of non-combustible material as mentioned in the article 3.13.4 of the Safety Code for the construction industry, S-2.1, r. 6.
 - .3 Set up fireproof fabrics when welding is done in superposition and there is risk of spark fall.
 - .4 Ensure to store bottles away from all heat sources.
 - .5 Do not store bottles close to staircases, exits, corridors and elevators.
 - .6 Do not put acetylene in contact with metals such as silver, mercury, copper and alloys of brass having more than 65 % copper, to avoid the risk of an explosive reaction.
 - .7 Check that electric arc welding equipment has the necessary tension and is properly grounded.
 - .8 Ensure that the conducting wires of electric welding equipment are not damaged.
 - .9 Place the welding equipment on flat ground and cover/protect from the elements.
 - .10 Move away or protect combustible materials which are near welding equipment.
 - .11 Prohibit to welding or cutting any closed container.
 - .12 Implement suitable protection measures when welding or cutting is carried out near drains, tanks or other receptacle of flammable material.
 - .13 Do not perform any cutting, welding or work with a naked flame on a container, a tank, a pipe or other container containing a flammable or explosive substance unless:
 - .1 Air Samples indicating that work can be made without danger have been taken; or

- .2 Provisions to ensure the safety of the workers have been implemented.

1.18 Lifting devices and operations

- .1 Position lifting devices in such a way that loads are not carried over workers, occupants or the public.
- .2 The Contractor must transmit to the Departmental Representative a work procedure, signed and sealed by an engineer, including the position of the crane, a sketch of the trajectory of the transported loads, the length of the mast and a plan of lifting for the handling of loads above occupied buildings. Departmental Representative can, if judge necessary, impose work of evening and weekend.
- .3 All mobile cranes manufactured after January 1, 1980 must be equipped with a safety device against overload.
- .4 All mobile cranes with cables manufactured after January 1, 1980, must be provided with a safety device against two-blocking.
- .5 Provide the Departmental Representative with a mechanical service inspection certificate for each lifting device. Inspections must be carried out just prior to the delivery of the equipment to the work site.
- .6 For all winch installations, provide the Departmental Representative with the installation method recommended by the manufacturer. If unavailable, the Contractor shall provide an installation procedure signed and sealed by an engineer. The installation procedure must take into account the load bearing capacity, the amount, weight and location of counterweight and any other detail that may affect the capacity and stability of the device.
- .7 In addition to the mechanical service inspection certificate, the annual inspection certificate and the crane logbook must be aboard all crane and crane-truck cabs.
- .8 The entire lifting area shall be closed off to prevent non-authorized people from entering it.
- .9 Obtain any required permits, at its own expense, in the event the work area must be temporarily closed off to meet the requirements stipulated in the preceding paragraph or for any other reason pertaining to the safety of workers, occupants or the public.
- .10 Inspect carefully all of the slings and lifting accessories and make sure that those in poor condition are destroyed or scrapped.
- .11 Compressed-gas cylinders shall be lifted with a basket specially designed for this purpose.

1.19 Scaffolding

.1 Foundation:

- .1 Scaffolding shall be installed on a solid foundation so that it does not slip or rock.

.2 Assembly, bracing and mooring:

- .1 All scaffolding shall be assembled, braced and moored in accordance with the manufacturer's instructions and the provisions of the Safety Code for the construction industry.
- .2 Where a situation requires the removal of part of the scaffolding (e.g., crosspieces), submit an assembly procedure signed and sealed by an engineer certifying that the scaffolding assembled in that manner will allow the work to be done safely given the loads to which it will be subject.
- .3 For scaffolding where the span between two supports is greater than 3 m, provide an assembly plan signed and sealed by an engineer.

.3 Platforms:

- .1 Scaffolding platforms shall be designed and installed in accordance with the provisions of the Safety Code for the construction industry.
- .2 If planks are used, they shall be approved and stamped in accordance with section 3.9.8 of the Safety Code for the construction industry (in force January 1, 2002).
- .3 The platforms shall cover the entire surface protected by the guardrails.
- .4 The above notwithstanding, scaffolding 4 sections (or 6 meters) high or higher shall have a full platform covering the entire surface of the putlogs every 3 m or fraction thereof, and the components of that platform shall not be moved at any time to create an intermediate landing.

.4 Guardrails:

- .1 A guardrail shall be installed on every landing.
- .2 Cross braces shall not be considered guardrails.
- .3 Where scaffolding 4 sections (or 6 meters) high or higher requiring full platforms is used, guardrails shall be installed on each landing at the start of work and shall remain in place until the work is completed.

.5 Access:

- .1 Ensure that access to the scaffolding does not compromise worker safety.
- .2 Where the platforms of the scaffolding are comprised of planks, ladders shall be installed in such a way that planks extending beyond the platform do not block the way up or down.

- .6 Protection of the public and occupants:
 - .1 Identify the boundaries of and barricade the work area so as to limit access to authorized workers only.
 - .2 Install covered walkways, nets or other similar devices to protect the public or the occupants against falling objects.
- .7 Use of public thoroughfares:
 - .1 Where it is necessary to encroach on a public thoroughfare, obtain at its own's expense any authorizations and permits required by the competent authority.
 - .2 Install all required signage, barricades or other devices needed to ensure the safety and security of the public and its own facilities.

1.20 Special conditions for work involving drowning hazards

- .1 The following requirements shall be met for work involving drowning risks:
 - .1 Comply with section 2.10.13 of the Safety Code for the construction industry.
 - .2 (a) Wear a life jacket or buoyancy device that meets the standard set out in the Canadian General Standards Board Standard:
 - .1 UL1180, Standard Safety Fully Inflatable Recreational Personal Flotation Devices
 - .2 Or for few exceptions, be accepted by Transport Canada.
 - .1 (b) or being protected by a security net or a fall protection system.
 - .3 Obtain and forward to the Departmental Representative a letter of compliance issued by Transport Canada for the approval of any vessel (transportation, rescue, inspection, etc.) before work begins. (refer to: Guy Rondeau, Transport Canada, (418) 648 5334).
 - .4 Ensure that a rescue vessel moored and in the water is available for each workstation. However, where the vessel is accessible by land, it may serve more than one workstation provided the distance between any workstation and the vessel is less than 100 m.
 - .5 Ensure that the vessel has the necessary features to accommodate persons likely to be part of a rescue operation.
 - .6 Ensure that the rescue vessel is available for workers at all times in case of an emergency.
 - .7 Ensure that a qualified person is available to use the emergency equipment. That person must have a pleasure craft operator card for the length of vessel being used.
 - .8 Establish written emergency procedures containing the following information and ensure that all workers subject to those procedures have the training and information needed to apply them:

- .1 A full description of the procedures, including the responsibilities of the people who have access to the work site;
 - .2 Emergency equipment location.
- .9 Where the work site is a landing stage, a reservoir, a break water, a wharf or any similar structure, a ladder with at least two rungs below the surface of the water shall be installed on the front of the structure every 60 m. This measure shall apply even if the project is a construction project, in which case a temporary (or portable) ladder may be used and removed when the work is complete if the owner does not own the basic facilities.

1.21 DIVING OPERATIONS

- .1 Compliance with all the requirements of the Regulation respecting occupational health and safety (S-2.1, r.19.1), more specifically section XXVI.I, entitled Underwater Work. Compliance, furthermore, with the latest editions of standards CAN/CSA Z275.2 – Occupational Safety Code for Diving Operations, CAN/CSA Z275.1 – Hyperbaric Chambers and CAN/CSA Z275.4 – Competency Standard for Diving Operations. In the event of conflict between these requirements, the most stringent requirement shall apply.
- .2 In addition to the above, in cases where construction work is involved, compliance with the Safety Code for the Construction Industry (S-2.1, r.4).
- .3 Before starting the work, submit to the Departmental Representative the following documents, as per the Regulation respecting occupational health and safety:
 - .1 The professional diving training certificate of each member of the dive team OR a document recognizing the skills of those persons in accordance with the Competency Standard for Diving Operations, CAN/CSA Z275.4-02, as per section 312.8 of the Regulation;
 - .2 The workplace first-aid training certificate of each member of the dive team;
 - .3 The medical certificate of each member of the dive team;
 - .4 For each dive included in this contract, a dive plan containing the following information, in addition to that required under the Regulation respecting occupational health and safety:
 - .1 The thermal protection to be used;
 - .2 The repetitive dive factor;
 - .3 The no-decompression limit;
 - .4 The circumstances in which the dive must be terminated;
 - .5 The procedures to be followed to ensure that machinery, equipment or devices that could create a hazard have been locked out;
 - .6 The decompression table to be used, as required;
 - .5 A notification confirming that a system for communicating with the Service d'assistance médicale pour les urgences en plongée [medical assistance service designated by the Department] is available at the diving station at all times.

- .4 The Contractor shall take into account the following specific characteristics of the work site, and adapt its dive plan accordingly.
- .5 If the dive station is more than 2 metres above the water, provide to the Departmental Representative:
 - .1 A drawing of the equipment used to transport the worker through the air-water interface, if a device other than a stage is used for that purpose; and
 - .2 A drawing of the device used to hoist the stage or other device, unless that device is a crane or boom truck.
- .6 If the dive is carried out from a vessel, provide to the Departmental Representative the following documents:
 - .1 Proof of qualification of the vessel operator; and
 - .2 The vessel's certificate of compliance from Transport Canada.
- .7 Before starting the work, carry out an underwater rescue simulation at the site, as required under section 312.31 of the Regulation respecting occupational health and safety.
- .8 On a daily basis, complete and provide to the Departmental Representative a checklist confirming the presence and condition of the equipment required at the dive site as per the dive plan.
- .9 Ensure that all other documents required under section XXVI of the Regulation respecting occupational health and safety are available at the site at all times (diving logbook, diver's logbook, etc.).
- .10 All persons assigned to this contract and who remain above water shall comply with sections 355 to 357 of the Regulation respecting occupational health and safety.
- .11 Where an emergency vessel is required in order to comply with section 357 of the Regulation respecting occupational health and safety, obtain the vessel's certificate of compliance issued by Transport Canada, and provide it to the Departmental Representative.

1.22 Contractor responsibility

- .1 The wharf of Matane will remain open during works. The access road to wharf will also have to remain functional during works. Thus, site users must have access to wharf for their unloading activities.
- .2 Contractor will have to allow the vehicle circulation to the Port director office, the warehouse and the North storage area.
- .3 Contractor is the entire responsible of SST in the security area indicated on plans. This working area, reserved to the Contractor must be protected and securized by fences and concrete jerseys, as indicated on plans and section 01 14 00 – Works restrictions.
- .4 Contractor must coordinate and plan the wharf users needs, and be flexible and collaborate to allow users to continue their unloading activities during works duration.

PART 2 – PRODUCTS

2.1 Not used

.1 Not Used.

PART 3 – EXECUTION

3.1 Not used

.1 Not Used.

END OF SECTION

**HOT WORK PERMIT****BUILDING:**

BEFORE INITIATING HOT WORK, ENSURE PRECAUTIONS ARE IN PLACE!
MAKE SURE AN APPROPRIATE FIRE EXTINGUISHER IS READILY AVAILABLE!

This Hot Work Permit is required for any operation involving open flames or producing heat and/or sparks. This includes, but is not limited to: welding, brazing, cutting, grinding, soldering.

1. **Company doing Hot Work:** Post the permit at the Hot Work Location. After Hot Work, indicate time completed and leave permit posted for Fire Watch.
2. **Fire Watch:** Prior to leaving area, do final inspection and sign the permit at the security office.

☐

Employee

☐

Contractor

Hot Work Done by (Company)

Date

Job Number

Location/Building and Floor

Nature of Job

Person in Charge

Signature

I verify the above location has been examined, the precautions checked on the Required Precautions Checklist have been taken to prevent fire, and permission is authorized for this work.

PFM Authorization

Signature

Date Permit Issued

Time Permit Issued

Date Permit Expires

Time Permit Expires

Fire Watch Signoff

Work area and all adjacent areas to which sparks and heat might have spread were inspected during the fire watch period and were found fire safe.

Signed: _____

Fire Watch Signoff

Work area was monitored for 1 hour following Hot Work and found fire safe.

Signed: _____

NOTE:

All fire incidents are to be reported immediately by using one of the following methods:

1. Activating the nearest fire alarm station.
2. Calling the fire department (or 911 where applicable).
3. Notifying the immediate supervisor or the security.

Required Precautions Checklist

- ☐ Available sprinklers, hose streams and extinguishers are in service/operable.
- ☐ Hot Work equipment in good repair (PWGSC equipment ONLY).

Requirement within 35 ft. (11M) of Work

- ☐ Flammable liquids, dust, lint and oily deposits removed.
- ☐ Explosive atmosphere in area eliminated.
- ☐ Floors swept clean.
- ☐ Combustible floors wet down, covered with fire resistive sheets.
- ☐ Remove other combustibles where possible. Otherwise protect with fire resistive tarpaulins or metal shields.
- ☐ All wall and floor openings covered.
- ☐ Fire resistive tarpaulins suspended beneath work.

Work on Walls or Ceilings

- ☐ Construction is noncombustible and without combustible covering or insulation.
- ☐ Combustibles on other side of walls moved away.

Work on Equipment

- ☐ Enclosed equipment cleaned of all combustibles.
- ☐ Containers purged of flammable liquids/vapours.
- ☐ Pressurized vessels, piping and equipment removed from service, isolated and vented.

Fire Watch/Hot Work Area Monitoring

- ☐ Fire watch will be provided during and for 60 minutes after work, including any break activity.
- ☐ Fire watch is supplied with suitable extinguisher(s).
- ☐ Fire watch is trained in use of this equipment and in sounding alarm.
- ☐ Fire watch may be required for adjoining areas, above and below.
- ☐ Monitor hot work area for an additional three (3) hours after the 60 minutes.

Other Precautions Taken

- ☐ Confined space entry permit required.
- ☐ Area is protected with heat detector.
- ☐ Ample ventilation to remove smoke/vapour from work area.
- ☐ Additional ventilation required.
- ☐ Welding screen required.
- ☐ Special Procedures required.
- ☐ Lockout/tagout required.
- ☐ Fire extinguisher required.
- ☐ Welding Procedure required.
- ☐ Welding Procedure attached.
- ☐ Level 1 Confined Space Entry Procedures
- ☐ Other (specify): _____

PART 1 – GENERAL**1.1 Section content**

- .1 References and Codes.

1.2 Related sections

- .1 Not used.

1.3 References and codes

- .1 All work shall meet or exceed the requirements of the latest edition of the standards of the Canadian Government Specifications Board (CGSB), the Canadian Standards Association (CSA), the National Building Code of Canada (NBC), the American Society for Testing and Materials (ASTM), the Canadian Standard Association (CSA), the American Concrete Institute (ACI) and the other standards and codes referred to herein.
- .2 At no time shall the requirements of the standards referred to on the drawings and in the specifications be violated on pretext that Provincial and local regulations are less stringent. Where conflict arises in the course of work, the strictest standards shall apply.
- .3 At any time when the specifications refer to the standards, the standard to be applied shall be the latest edition available, regardless of the edition referred to on the specification.
- .4 Meet or exceed requirements of:
 - .1 Contract documents.
 - .2 Specified standards, codes and referenced documents.

1.4 Laws, by-laws and ordinances

- .1 Contractor shall comply with rights and privileges of others and federal, provincial and municipal laws, by-laws and ordinances; ensure also that his employees in law or in fact, including subcontractors, comply with.
- .2 Before undertaking the work, Contractor shall obtain permits and approvals.

1.5 Smoke-free environment

- .1 Smoking restrictions and municipal by-laws shall be respected.

1.6 Fees, permits and taxes

- .1 Contractor shall give all notices, obtain and pay all construction permits for demolition, construction and other services as required by local authorities.
- .2 Contractor is liable for damage and cost related to failing to obtain required fees and permits.

PART 2 – PRODUCTS**2.1 Not used**

- .1 Not Used.

PART 3 – EXECUTION**3.1 Not used**

- .1 Not Used.

END OF SECTION

PART 1 – GENERAL**1.1 Related requirements**

- .1 Section 01 33 00 – Submittal procedures.
- .2 Section 01 29 83 – Payment laboratory testing.

1.2 Inspection

- .1 Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Place of Work.
- .3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .4 Departmental Representative can 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.
- .5 On Departmental Representative request, Contractor must supply a craft with a driver to proceed to inspection and assume the fees.
- .6 In the case of works in height which imply that a specific equipment is needed, the Contractor must provide the requested equipment to the Departmental Representative for its inspections.

1.3 Independent inspection agencies

- .1 Independent Inspection/Testing Agencies will be engaged by Departmental Representative for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Departmental Representative, unless indicated otherwise in other sections of the technical specifications.
- .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.
- .5 Correct defect and irregularities as advised by Departmental Representative at no cost to the Departmental Representative. Pay costs for retesting and reinspection.

1.4 Access to work

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

1.5 Procedures

- .1 Notify appropriate agency and the 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 labor and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.6 Rejected work

- .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by the 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 the 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 the Departmental Representative.

1.7 Tests and mix designs

- .1 Furnish test results and mix designs as requested in the 01 33 00 Submittal Procedures section.

1.8 Mock-ups

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

1.9 Mill tests

- .1 Submit mill test certificates as required of specification Sections.

1.10 Equipment and systems

- .1 Submit adjustment and balancing reports for mechanical, electrical and other systems.

PART 2 – PRODUCTS**2.1 Not used**

- .1 Not Used.

PART 3 – EXECUTION**3.1 Not used**

- .1 Not Used.

END OF SECTION

PART 1 - GENERAL**1.1 Related requirements**

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

1.2 Installation and removal

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

1.3 Water supply

- .1 Contractor is to provide continuous supply of potable water for construction use.
- .2 Arrange for connection of existing network to new dock and pay costs for installation, maintenance and removal.
- .3 Harbour master can supply water to the Contractor and the Contractor must assume entire fees for water supplying.

1.4 Temporary power and light

- .1 Power on site will not be supplied to contractor.
- .2 Pay costs for installation, maintenance and removal.
- .3 Provide and maintain safe temporary lighting throughout project.

1.5 Temporary communication facilities

- .1 Contractor is to provide and pay for temporary telephone, fax, printers, data hook up, internet including lines and equipment necessary for own use and use of Departmental Representative. Contractor must ensure the connection of these installations to the main network and pay for all of those services. All connections must be realized by a qualified electrician.
- .2 Communication facilities must be functional 24/7 during construction.

1.6 Fire protection

- .1 Provide and maintain temporary fire protection equipment during performance of Work required by governing codes, regulations and bylaws.
- .2 It is not allowed to burn materials and debris on the construction site.

PART 2 - PRODUCTS

2.1 Not used

- .1 Not Used.

PART 3 - EXECUTION

3.1 Not used

- .1 Not used

END OF SECTION

PART 1 – GENERAL**1.1 Related requirements**

- .1 Section 01 51 00 – Temporary utilities.
- .2 Section 01 56 00 – Temporary barriers and enclosures.

1.2 References

- .1 CAN/CSA S269.2-16, Access Scaffolding for Construction Purposes

1.3 Installation and removal

- .1 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, access to fenced area and details of fence installation.
- .2 Provide construction facilities in order to execute work expeditiously.
- .3 Remove from site all such work after use.

1.4 Scaffolding

- .1 Scaffolding in accordance with CAN/CSA-S269.2.
- .2 Provide and maintain scaffolding, ramps, ladders, platforms required to execute work. All temporary equipment must be conform to security legislations. The Departmental Representative may require signed and sealed plans for any temporary installation.

1.5 Hoisting

- .1 Provide, install, operate and maintain machinery required for moving of workers, materials and equipment.
- .2 Machinery to be operated by qualified operator.

1.6 Site storage/loading

- .1 Confine work and operations of employees within limits of Contract Documents. Do not unreasonably encumber premises with products. Contractor is responsible for any extra areas required and shall assume cost.

- .2 Do not load or permit to load any part of Work with weight or force that will endanger Work.

1.7 Construction parking

- .1 Parking will be permitted on site in the area reserved for the Contractor.
- .2 If access to site by existing roads is permitted, provide and maintain these roads for duration of works, and repair any damage occurred.
- .3 Clean access roads areas where used by Contractor's equipment.

1.8 Offices

- .1 Provide office heated to 22 degrees C, lighted 750 lx and ventilated, of sufficient size to accommodate site meetings, telephone and fax and furnished with drawing table. Minister can provide the contractor for his construction facility a water supply of 19 mm that Contractor should protect against freeze. There will also be a possibility to connect on a 120/208 Volt 100 Amper circuit with a breaker to protect the site circuit.
- .2 Provide marked and fully stocked first-aid case in a readily available location.
- .3 Subcontractors to provide their own offices as necessary. Direct location of these offices.
- .4 Localisation of Contractor office on site must be approved by Departmental Representative. This point will be discussed at the launching meeting.
- .5 Contractor has not the obligation to provide an office for the Departmental Representative. His office will be in the Port director office. However, the following services must be provided:
 - .1 Provide the internet high speed service, no data limits, with a wi-fi key, or a modem with router Wi-Fi in the director's office.
 - .2 Supply a complete and identified first aid kit and store it in a place of easy access in the Port director office.
 - .3 Provide a recent cellular phone, with case and recharge accessories.

1.9 Equipment, tool and materials storage

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

1.10 Sanitary facilities

- .1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.
- .2 Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.
- .3 Contractor will not be allowed to use the sanitary facilities located in the Port director office.

1.11 Protection and maintenance of traffic

- .1 Provide access and temporary detour roads as necessary to maintain traffic.
- .2 Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by Departmental Representative.
- .3 Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs
- .4 Protect travelling public from damage to person and property.
- .5 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.
- .6 Verify adequacy of existing roads and allowable load limit on these roads. Contractor is responsible for repair of damage to roads caused by construction operations.
- .7 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.
- .8 Dust control to be adequate to ensure safe operation at all times.
- .9 Provide snow removal during period of Work.
- .10 Remove, upon completion of work, haul roads designated by Departmental Representative.

1.12 Clean-up

- .1 Remove construction debris, waste materials, packaging material from work site daily.
- .2 Clean dirt or mud tracked onto paved or surfaced roadways.
- .3 Store materials resulting from demolition activities that are salvageable.
- .4 Stack stored new or salvaged material not in construction facilities.

PART 2 – PRODUCTS

2.1 Not used

- .1 Not Used.

PART 3 – EXECUTION

3.1 Not used

- .1 Not used.

END OF SECTION

PART 1 – GENERAL**1.1 Related requirements**

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

1.2 References

- .1 Canadian General Standards Board (CGSB)
- .2 Canadian Standards Association (CSA International)

1.3 Access restriction

- .1 Provide, erect or arrange all access roads, temporary protection work, in order to execute Work expeditiously.
- .2 Contractor shall restrict site access to non-authorized people. Appropriate safety measures shall be taken during works to limit public access to site.
- .3 Remove from site all such work after use.

1.4 Access to site

- .1 Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work.
- .2 Provide access and required clearances for emergency vehicles.
- .3 Build, to enclose the construction site, a temporary chain-link fence, wired attached to T profiled stakes disposed 2.4 m c/c. This fence must be CNESST approved. Supply the required number of lockable fences to ware areas and construction areas for Contractor equipments and trucks.
- .4 For all the works duration, remove snow from all the area in the works limits. Access to installations must be ensured during the works and no snow must limit the access.
- .5 Snow removal and disposal must be realized following the federal, provincial and municipal laws.

1.5 Protection for off-site and public property

- .1 Protect surrounding private and public property from damage during performance of Work.
- .2 Contractor is to be responsible for damage incurred.

1.6 Protection of building finishes

- .1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.
- .2 Provide necessary screens, covers, and hoardings.
- .3 Contractor is to be responsible for damage incurred due to lack of or improper protection.
- .4 It is expected that storms may occur during construction. Contractor shall develop his own method of work accordingly. All damages incurred due to weather conditions shall be the Contractor responsibility.

PART 2 – PRODUCTS**2.1 Not used**

- .1 Not Used.

PART 3 – EXECUTION**3.1 Not used**

- .1 Not Used.

END OF SECTION

PART 1 – GENERAL**1.1 Related requirements**

- .1 Section 01 45 00 – Quality Control.

1.2 References

- .1 Conform to these reference standards, in whole or in part as specifically requested in specifications. Always conform to the latest reference standards even if not specified.
- .2 If there is question as to whether products or systems are in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.
- .3 Cost for such testing will be assumed by Departmental Representative in event of conformance with Contract Documents or by Contractor in event of non-conformance.
- .4 Use latest standard edition available at submission of Tender if no date or edition specified.

1.3 Quality

- .1 Products, materials, equipment and articles incorporated in Work (herein named “products”) 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 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve Contractor from his responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .3 Should disputes arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.
- .4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.

1.4 Availability

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

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

1.5 Storage, handling and protection

- .1 Handle and store products in manner to prevent damage, 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 weatherproof 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 Store sheet materials, lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.
- .7 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.
- .8 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.6 Transportation

- .1 Contractor is to pay costs of transportation of products required in performance of Work.

1.7 Manufacturer's instructions

- .1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures 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.

1.8 Quality of work

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

1.9 Coordination

- .1 Ensure cooperation of workers in laying out Work. Maintain efficient and continuous supervision.
- .2 Contractor is responsible for coordination of Work.

1.10 Remedial work

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

1.11 Fastenings

- .1 Provide metal fastenings and accessories in same texture, color and finish as adjacent materials, unless indicated otherwise.
- .2 Prevent electrolytic action between dissimilar metals and materials.

1.12 Fastenings - Equipment

- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .2 Bolts may not project more than one diameter beyond nuts.

1.13 Protection of work in progress

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

PART 2 – PRODUCTS

2.1 Not used

- .1 Not Used.

PART 3 – EXECUTION

3.1 Not used

- .1 Not Used.

END OF SECTION

PART 1 – GENERAL**1.1 Related requirements**

- .1 Section 01 74 21 – Construction / demolition waste management and disposal.
- .2 Section 01 35 43 – Environmental Procedures

1.2 Project cleanliness

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, including that caused by Owner or other Contractors.
- .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
- .3 Clear snow and ice from access to building, remove from site if required.
- .4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .5 Provide on-site containers for collection of waste materials and debris.
- .6 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .7 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.

1.3 Final cleaning

- .1 When Work is substantially performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .3 Prior to final review remove surplus products, tools, construction machinery and equipment.
- .4 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
- .5 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.

1.4 Waste managing and disposal

- .1 Sort waste materials for reuse and recycling purpose.

PART 2 – PRODUCTS

2.1 Not used

- .1 Not Used.

PART 3 – EXECUTION

3.1 Not used

- .1 Not Used.

END OF SECTION

PART 1 - GENERAL**1.1 Related requirements**

- .1 Section 01 74 11 – Cleaning
- .2 Section 02 41 16 – Structure Demolition

1.2 Waste disposal workplan

- .1 Prepare a waste disposal workplan prior to Project start-up.
- .2 Waste disposal workplan should include but not limited to:
 - .1 Destination of materials listed.
 - .2 Demolition techniques and sequencing.
 - .3 Schedule for demolition.
 - .4 Location.
 - .5 Safety measures.
 - .6 Protection measures.
 - .7 Clear labeling of storage areas.
 - .8 Details on waste materials handling and removal procedures.
 - .9 Quantities for materials to be salvaged for reuse.

1.3 Submittals

- .1 Provide receipts, scale tickets, waybills, and show quantities and types of waste materials disposed of.
- .2 Provide proof that waste materials were disposed of in a proper site/facility.

1.4 Materials source separation program (mssp)

- .1 Provide on-site facilities for collection, handling, and storage of anticipated quantities of waste materials.
- .2 Take necessary precautions to avoid soil contamination and aquatic life. The Departmental Representative can, at his will, verify soil quality after Work is done. Contractor shall assume costs of any decontamination work resulting from verification.
- .3 Note that contaminated granular materials in wharf and dredging area will have to be disposed. No contaminated material will be allowed into the water area.

- .4 Provide different locations for each type of waste materials, depending on where they will be disposed of.
- .5 Locate containers in locations, to facilitate deposit of materials without hindering daily operations.
- .6 Locate separated materials in areas which minimize material damage.
- .7 Transport waste materials to approved and authorized MSSP Facility.

1.5 Storage, handling and protection

- .1 Store materials to be transported off-site in locations as directed by Departmental Representative.
- .2 Unless specified otherwise, materials for removal do not become Contractor's property. They shall be transported to an approved site.
- .3 Protect, pile, stock and register the collected elements.
- .4 Components not removed for demolition are to remain to Departmental Representative satisfaction.
- .5 Support affected structures. If safety of building is endangered, cease operations and immediately notify Departmental Representative.
- .6 Protect mechanical and electrical facilities that are to remain.
- .7 Separate and store materials produced during dismantling of structures in designated areas.
- .8 Provide a transport and disposal confirmation letter for sorted and disposed materials.

1.6 Disposal of wastes

- .1 Do not bury rubbish or waste materials, unless advised otherwise by Engineer.
- .2 Do not dispose of any materials into waterways, storm, or sanitary sewers.
- .3 Keep records of construction waste.
- .4 Remove materials from demolition Work progresses.

1.7 Site utilization

- .1 Realize works without interference with the site normal use.

1.8 Scheduling

- .1 Coordinate Work with other activities at site to ensure timely and orderly progress of Work.

PART 2 – PRODUCTS**2.1 Not used**

- .1 Not Used.

PART 3 – EXECUTION**3.1 General**

- .1 Handle waste materials in accordance with appropriate regulations and codes, based on their contamination level.
- .2 Realize works as in the disposal plan.

3.2 Cleaning

- .1 Cleaning during works: realize cleaning according to the 01 74 11 – Cleaning section.
 - .1 Leave work area in clean and orderly condition at the end of each day.
- .2 Final Clean-up: Evacuate from site all excess materials, waste, tools and equipment.

END OF SECTION

PART 1 – GENERAL**1.1 Administrative requirements****.1 Acceptance of Work Procedures:**

- .1 Contractor's Inspection: Contractor conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.

- .1 Notify Departmental Representative in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
 - .2 Request Departmental Representative inspection.

.2 Departmental Representative Inspection:

- .1 Departmental Representative and Contractor to inspect Work and identify defects and deficiencies.
 - .2 Contractor to correct Work as directed.

.3 Completion Tasks: submit written certificates that tasks have been performed as follows:

- .1 Work: completed and inspected for compliance with Contract Documents.
 - .2 Defects: corrected and deficiencies completed.
 - .3 Equipment and systems: tested, and fully operational.
 - .4 Certificates required: submitted.
 - .5 Work: complete and ready for final inspection.

.4 Final Inspection:

- .1 When completion tasks are done, request final inspection of Work by Departmental Representative, and Contractor.
 - .2 When Work incomplete according to Owner and Departmental Representative, complete outstanding items and request re-inspection.

.5 Declaration of Substantial Performance: when Departmental Representative considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.**.6 Commencement of Lien and Warranty Periods: date of Owner's acceptance of submitted declaration of Substantial Performance to be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.****.7 Final Payment:**

- .1 When Departmental Representative considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.

- .2 When Work deemed incomplete by Departmental Representative, complete outstanding items and request re-inspection.
- .8 Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with contractual agreement.

1.2 Final cleaning

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

PART 2 – PRODUCTS

2.1 Not used

- .1 Not Used.

PART 3 – EXECUTION

3.1 Not used

- .1 Not Used.

END OF SECTION

PART 1 – GENERAL

1.1 Related requirements

- .1 Section 01 74 21 – Construction/demolition waste management and disposal
- .2 Section 01 35 43 – Environmental procedures
- .3 Section 01 35 29.06 – Health and safety requirements

1.2 References

- .1 Canadian Standard Association (CSA)/CSA International
 - .1 CSA S350-FM1980(R2003), Code of Practice for Safety in Demolition of Structures.
- .2 Department of Justice Canada (Jus)
 - .1 Canadian Environmental Assessment Act (CEAA), 1995, c. 37.
 - .2 Canadian Environmental Protection Act (CEPA), 1999, c. 33.

1.3 Action and informational submittals

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures and Section 01 74 21 - Construction/Demolition Waste Management Disposal.
- .2 Prior to beginning of Work on site submit to Departmental Representative the following information:
 - .1 Descriptions of and anticipated quantities of materials to be landfilled.
 - .2 Schedule of selective demolition.
 - .3 Number and location of dumpsters.
 - .4 Anticipated frequency of waste pickup.
 - .5 Name and address of waste receiving organizations.
- .3 Written authorization from Departmental Representative is required to deviate from receiving organizations listed in Waste Reduction Workplan.
- .4 When required by governing authorities, submit to Departmental Representative demolition drawings, diagrams or details showing sequence of demolition work and supporting structures and underpinning, if applicable. If such documents are required, they shall be stamped and signed by professional engineer registered or licensed in Province of Quebec, Canada.

1.4 Transport, storage and handling

- .1 Sort waste materials as required to transport to a licensed facility in accordance to section 01 74 21 – Construction/Demolition waste management and disposal.
- .2 According to 01 34 43 – Environmental Protection, art. 1.10.1.6, it is forbidden to waste demolition materials (concrete, granular, steel, pavement etc.) in the water.
- .3 Demolition risks to lead to granular material fall and concrete debris on the sea bed. Contractor has the obligation to collect the entire waste lost in the water, no matter of the size or type, and this in the shortest delay.
- .4 Otherwise, the pile extraction, demolition and stone removal, must not change the actual dredging pattern in the harbor.
- .5 The contractor working method must clearly minimize the waste emission risk on the sea bed.

1.5 Existing conditions

- .1 Verify hazardous material registry and take necessary measures to protect the environment.
- .2 If material listed as hazardous is encountered in course of demolition, stop work, take preventative measures, and notify Departmental Representative immediately.
 - .1 Proceed only after receipt of written instructions have been received from Departmental Representative.
- .3 Structures to be demolished are based on their condition on date that tender is accepted.
- .4 Contractor will have to take into account the various loads restrictions indicated on plans. His construction methods will necessary take into account these aspects.

1.6 Demolition method

- .1 Contractor to obtain the advice of his own experts with regard to the methods and techniques to be used for the demolition of the work of this contract.
 - .1 The demolition method should be clearly explained to the Departmental Representative at the start-up meeting.
 - .2 Contractor must take into account inspections and photographic surveys on piles and concrete for its demolition method elaboration. Contractor must submit an Engineer sealed and signed method which take into account commercial wharf important structural limited capacities.
 - .3 Contractor shall use a method, equipment, tools and techniques needed to demolish concrete while preserving existing structures.
 - .4 Contractor method shall minimize the risk of emission of debris on the seabed.
 - .5 The Contractor shall assess the stability of the structure to be demolished and develop a

working method adapted to the condition of the structure. Changes to the condition of the structure during work may not be argued to claim additional amounts of money.

1.7 Demolition debris management

- .1 In accordance with Section 01 35 43 it is forbidden to release demolition materials (concrete, aggregates, steel, paving etc.) into the maritime environment.
- .2 The demolition of the concrete on wharf walls will likely cause the fall of granular material and concrete debris on the seabed. The Contractor shall recover all loose debris, regardless of their size and nature as soon as possible.
- .3 The Contractor shall in no way alter or disrupt the current elevation of the seabed when working underwater.

PART 2 - PRODUCTS

2.1 Machinery and equipment

- .1 Heavy machinery:
 - .1 On-road vehicles to: CEPA-SOR/2003-2, On-Road Vehicle and Engine Emission Regulations.
 - .2 Leave machinery running only while in use, except where extreme temperatures prohibit shutting machinery down.
- .2 Equipment:
 - .1 Using a positioner-enhancer for pneumatic hammer (PPH) as support and assistance equipment is allowed for pneumatic hammers manuals.
 - .2 Contractor is authorized to use a pneumatic hammer 15 kg or 30 kg up to first reinforcement layer. A hydraulic hammer 60 J or less may be used in place of pneumatic hammer.
 - .3 The Contractor must use a pneumatic hammer 7 kg to remove the concrete around and under rebars.

PART 3 - EXECUTION

3.1 Preparation

- .1 Work in accordance with Section 01 35 29. – Health and safety requirements and demolition standards in place.
- .2 Take necessary measures to keep structures to remain from displacement or collapsing and to prevent any damages to such structures. Put in place some temporary retaining walls if

necessary. There is a possibility that the Departmental Representative ask for signed and sealed Engineer methods.

- .3 Protect any equipment, mechanical and electrical facilities, including ducts which must remain in place.
- .4 Disconnect electrical lines entering buildings to be demolished.
 - .1 Post warning signs on electrical lines and equipment which must remain energized to serve other properties during period of demolition.
- .5 Disconnect and cap designated mechanical services in areas to be demolished, as required.
 - .1 Remove sewer and water lines as directed by Departmental Representative
- .6 Do not disrupt active or energized utilities designated to remain undisturbed. If disruption is inevitable, notify Departmental Representative and take necessary measures such as to minimize impact and interruption period.

3.2 Demolition

- .1 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.
- .2 Demolish structures as per Contract Drawings.
- .3 Repair damages caused during demolition, if required and as indicated by Departmental Representative.
- .4 Contractor shall take into consideration the condition of structures prior to start of Demolition.
- .5 Ensure that mechanical and electrical facilities remains operational during demolition work.
- .6 By the end of each working day, make sur that the structure is stable.
 - .1 Ensure that the security enclosure is functional.
- .7 Proceed to demolition works in a way to minimize dust.

END OF SECTION

PART 1 – GENERAL**1.1 Related requirements**

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Section 03 30 00 – Cast in place concrete.

1.2 References

- .1 Canadian Standards Association (CSA)
 - .1 CSA-A23.1-04 Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
 - .2 CSA-O86.S1-05 Engineering Design in Wood.
 - .3 CSA O121-M1978(R2003), Douglas Fir Plywood.
 - .4 CSA O151-04, Canadian Softwood Plywood.
 - .5 CSA O153-M1980(R2003), Poplar Plywood.
 - .6 CSA S269.1-1975(R2003), Falsework for Construction Purposes.
 - .7 CAN/CSA-S269.3-M92(R2003), Concrete Formwork, National Standard of Canada

1.3 Action and informational submittals

- .1 Submit shop drawings for formwork and falsework in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Indicate method and schedule of construction, shoring, stripping and re-shoring procedures, materials, arrangement of joints, special architectural exposed finishes, ties, liners, and locations of temporary embedded parts. Comply with CAN/CSA-S269.3 for formwork drawings.
- .3 Indicate formwork design data: permissible rate of concrete placement, and temperature of concrete, in forms.
- .4 Indicate sequence of erection and removal of formwork/falsework as directed by Department Representative.
- .5 Submit drawings stamped and signed by professional Engineer registered in Province of Quebec, Canada.

PART 2 - PRODUCTS**2.1 Materials**

- .1 Formwork materials:
 - .1 Use new wood and wood product formwork materials to CAN/CSA-O86.1 or use steel form.
- .2 Form ties:
 - .1 Use removable or snap-off metal ties, fixed or adjustable length, free of devices leaving holes larger than 25 mm diameter in concrete surface.
- .3 Form release agent: non-toxic, biodegradable, low VOC.
- .4 Form stripping agent: colorless mineral oil, non-toxic, biodegradable, low VOC and free of kerosene.
- .5 Falsework materials: to CSA-S269.1.
- .6 Sealant: Use appropriate sealant.

PART 3 - EXECUTION**3.1 Fabrication and erection**

- .1 Verify lines, levels and centers before proceeding with formwork/falsework and ensure dimensions agree with drawings.
- .2 Obtain Department Representative's approval prior to pouring concrete directly on ground or for use of earth forms framing openings not indicated on drawings.
- .3 Fabricate and erect falsework in accordance with CSA S269.1.
- .4 Do not place shores and mud sills on frozen ground.
- .5 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.
- .6 Align form joints and make watertight. Keep form joints to minimum.
- .7 Use 25 mm chamfer strips on external corners and/or 25 mm fillets at interior corners, joints, unless specified otherwise.

- .8 Form chases, slots, openings, drips, recesses, expansion and control joints as indicated and conform.
- .9 Build in anchors, sleeves, and other inserts required to accommodate Work specified in other sections.

Ensure that anchors and inserts will not protrude beyond surfaces designated to receive applied finishes, including painting.

- .10 When contractor must provide falsework plans, after their construction, and after their inspection by an Engineer member of OIQ and prior to concrete pouring, he must provide the Departmental Representative a writing, signed by this engineer notifying that forming are conform to the provided plans. This writing must also notify hour and date of the inspection.
- .11 Clean formwork in accordance with CSA-A23.1/A23.2, before placing concrete.

3.2 Removal and reshoring

- .1 Leave formwork in place for following minimum periods of time after placing concrete.
 - .1 1 days for slabs on grade.
 - .2 7 days for all other methods.
- .2 Remove formwork when concrete has reached 70 % of its design strength or minimum period noted above, whichever comes prior, and replace immediately with adequate reshoring for 28 days or 35 MPa (along the first of these two conditions) following pour.
- .3 Re-use formwork and falsework subject to requirements of CSA-A23.1/A23.2.

END OF SECTION

PART 1 - GENERAL**1.1 Related requirements**

- .1 Section 01 33 00 – Submittal Procedures
- .2 Section 01 45 00 – Quality control
- .3 Section 01 61 00 – Common product requirements
- .4 Section 03 30 00 – Cast-in-place concrete.

1.2 References

- .1 American Concrete Institute (ACI)
 - .1 SP-66-04, ACI Detailing Manual 2004.
- .2 CSA International
 - .1 CSA-A23.1-F09/A23.2-F09, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.
 - .2 CAN/CSA-A23.3-F04(R2010), Design of Concrete Structures.
 - .3 CAN/CSA G30.3-M1983(R1991), Cold-drawn annealed steel wire ties for concrete reinforcement.
 - .4 CSA-G40.21-F04(C2009), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .5 CSA W186-FM1990(C2007), Welding of Reinforcing Bars in Reinforced Concrete Construction.
- .3 ASTM International
 - .1 ASTM A 82/A 82M-07, Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
- .4 Reinforcing Steel Institute of Canada (RSIC)
 - .1 RSIC-2004, Reinforcing Steel Manual of Standard Practice.

1.3 Action and informational submittals

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Prepare reinforcement drawings in accordance with RSIC Manual of Standard Practice and SP-66.

.3 Shop Drawings:

- .1 Submit drawings stamped and signed by professional engineer registered by OIQ, when required by the Departmental Representative.

.1 Indicate placing of reinforcement and:

- .1 Bar bending details.
- .2 Lists.
- .3 Quantities of reinforcement.
- .4 Sizes, spacings, locations of reinforcement and mechanical splices if approved by Departmental Representative, with identifying code marks to permit correct placement without reference to structural drawings.
- .5 Indicate sizes, spacings and locations of chairs, spacers and hangers.

- .2 Detail lap lengths and bar development lengths to CAN/CSA-A23.3, unless otherwise indicated.

1.4 Quality assurance

- .1 Submit in accordance with Section 01 45 00 - Quality Control.

- .1 Mill Test Report: Provide Departmental Representative with certified copy of mill test report of reinforcing steel, minimum 4 weeks prior to beginning reinforcing work.

1.5 Delivery, storage and handling

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

- .3 Storage and Handling Requirements:

- .1 Store materials off ground and in accordance with manufacturer's recommendations.
- .2 Replace defective or damaged materials with new.

PART 2 - PRODUCTS

2.1 Materials

- .1 Substitute different size bars only if permitted in writing by Departmental Representative.
- .2 Reinforcing steel: billet steel, grade 400W, deformed bars to CAN/CSA-G30.18, unless indicated otherwise.

- .3 Cold-drawn annealed steel wire ties: to CAN/CSA G30.3 or ASTM A82.
- .4 Chairs, bolsters, bar supports, spacers: to CAN/CSA-A23.1/A23.2.
- .5 Mechanical splices: subject to approval of Departmental Representative.

2.2 Fabrication

- .1 Fabricate reinforcing steel in accordance with CAN/CSA-A23.1/A23.2, SP-66 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.

2.3 Source quality control

- .1 Provide the Consultant with certified copy of mill test report of reinforcing steel, showing physical and chemical analysis, minimum two (2) weeks prior to beginning reinforcing work.
- .2 Inform the Consultant of proposed source of material to be supplied.

PART 3 - EXECUTION

3.1 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, which develop cracks or splits.

3.2 Placing reinforcement

- .1 Place reinforcing steel as indicated on placing drawings and in accordance with CAN/CSA-A23.1/A23.2.
- .2 After reinforcing installation and prior to placing concrete, Contractor must give the Departmental Representative a writing from an Engineer member of OIQ, that all reinforcing, anchors are installed in conformity with contract documents regarding the steel

manufacturer, grade, type of protection, diameter, length, localization, concrete protection and wires spacing. This writing must also indicate the date and hour of the inspection.

- .3 Protect coated portions of bars with covering during transportation and handling.

END OF SECTION

PART 1 – GENERAL

1.1 Related requirements

- .1 Section 01 29 83 – Payment laboratory Testing
- .2 Section 01 33 00 – Submittal Procedures
- .3 Section 01 45 00 – Quality Control
- .4 Section 03 10 00 – Concrete forming and accessories.
- .5 Section 03 20 00 – Concrete reinforcing.

1.2 References

- .1 American Society for Testing and Materials (ASTM)
 - .1 ASTM C 109/C 109M-95, Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2 in. or 50 mm Cube Specimens).
 - .2 ASTM C 260-10A, Standard Specification for Air-Entraining Admixtures for Concrete.
 - .3 ASTM C 309-07, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
 - .4 ASTM C 494/C 494M-10, Standard Specification for Chemical Admixtures for Concrete.
 - .5 ASTM C 827-95a, Test Method for Change in Height at Early Ages of Cylindrical Specimens from Cementitious Mixtures.
 - .6 ASTM C 939-94a, Test Method for Flow of Grout Preplaced-Aggregate Concrete.
- .2 Canadian Standard Association (CSA)
 - .1 CSA A23.1, Concrete Materials and Methods of Concrete Construction./CSA A23.2-14, Methods of Test and Standard Practices for Concrete
 - .2 CSA A283-06, Qualification Code for Concrete Testing Laboratories.
 - .3 CSA A3000-F08, Cementitious Materials Compendium(Consists of A3001, A3002, A3003, A3004 and A3005).

1.3 Action and informational submittals

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

1.4 Quality assurance

- .1 In accordance with Section 01 45 00 - Quality Control.

- .2 Provide to the Departmental Representative a minimum 4 weeks prior to starting concrete work, with valid and recognized certificate from plant delivering concrete.
- .3 Provide certificate in accordance with Section 01 33 00 – Submittal Procedures.
- .4 Minimum 4 weeks prior to starting concrete work, provide manufacturer's test reports and qualified independent laboratory certificate for review by Departmental Representative, attesting that following items are compliant to specifications:
 - .1 Portland Cement.
 - .2 Cementitious Mixtures.
 - .3 Grout.
 - .4 Admixtures.
 - .5 Aggregates.
 - .6 Water.
 - .7 Joints sealant.
 - .8 Curing
- .5 Minimum 2 weeks prior to starting concrete work, provide Concrete Mix chosen to have quality, strength and performances specified, and in accordance with CSA-A23.1.
- .6 Minimum 2 weeks prior to starting concrete work, provide proposed quality control procedures for review by Departmental Representative, in accordance with Section 01 45 00 – Quality Control, on following items:
 - .1 Falsework erection.
 - .2 Hot weather concrete.
 - .3 Cold weather concrete.
 - .4 Curing.
 - .5 Finishes.
 - .6 Formwork removal.
 - .7 Joints execution.

1.5 Delivery, storage and handling

- .1 Concrete delivery: ensure continuous concrete delivery from plant meets CSA A23.1/A23.2.
- .2 Contractor must ensure that delivery duration will allow concrete to meet the specifications.

PART 2 – PRODUCTS

2.1 Materials

- .1 Hydraulic cement: to CSA A3001, type GUb-SF.
- .2 Water: to CSA A23.1.

- .3 Aggregates: to CSA A23.1.
- .4 Air entraining admixture: to ASTM C 260.
- .5 Chemical admixture: to ASTM C 494. Departmental Representative to approve accelerating or set retarding admixtures during cold and hot weather placing.
- .6 Curing compound: to CSA A23.1 and ASTM C 309.

2.2 Mixes

- .1 Medium density concrete to CSA A23.1, and to meet the following performance criteria unless otherwise noted.
- .2 The mix used to fill piles will meet those followings:
 - .1 Cement: Portland cement type GUb-SF.
 - .2 Minimum compressive strength at 28 days: 35 MPa.
 - .3 Aggregate size: 20 mm Maximum.
 - .4 Slump: at time and point of discharge 50 to 110 mm.
 - .5 Air-entraining: from 5% to 8%
 - .6 Chemical admixtures: Water reducing, set retarding, set accelerating, strength enhancer, air entraining, plasticizing agents to ASTM C 494.
 - .7 Water/cement maximum ratio: 0.45.
 - .8 Minimum cement quantity: 340 kg/m³.
- .3 The mix used for the concrete massif and other structures will meet those followings:
 - .1 Cement: Portland cement type GUb-F/SF or GUb-S/SF.
 - .2 Minimum compressive strength at 28 days: 35 MPa.
 - .3 Aggregate size: 10 mm Maximum.
 - .4 Slump: at time and point of discharge 625 to 725 mm.
 - .5 Air-entraining: from 6% to 9%.
 - .6 Chemical admixtures: Water reducing, set retarding, set accelerating, strength enhancer, air entraining, plasticizing agents to ASTM C 494.
 - .7 Water/cement maximum ratio: 0.35 to 0.40.
 - .8 Minimum cement quantity: 460 kg/m³.

PART 3 – EXECUTION

3.1 Preparation

- .1 Obtain Departmental Representative's approval before placing concrete. Provide 24 hours minimum notice prior to placing of concrete.
- .2 Place concrete reinforcing in accordance with Section 03 20 00 - Concrete Reinforcing.
- .3 Contractor will have to respect those following during casting:

- .1 During concreting operations, ensure concrete delivery and handling facilitates placing with minimum of re-handling, and without damage to existing structure or Work.
- .2 Provide a spare pump on the construction site to prevent pouring interruption in case of a broken pump.
- .4 Pumping of concrete is permitted only after approval of equipment and mix.
- .5 Ensure reinforcement and inserts are not disturbed during concrete placement.
- .6 Prior to placing of concrete obtain Departmental Representative's approval of proposed method for protection of concrete during placing and curing.
- .7 Protect existing structures against dirt.
- .8 Maintain accurate records of poured concrete items to indicate date, location of pour, quality, air temperature and test samples taken.
- .9 Do not place load upon new concrete until authorized by Departmental Representative.

3.2 Installation, application

- .1 Do cast-in-place concrete work to CSA A23.1.
- .2 Sleeves and inserts:
 - .1 Do not permit penetrations, sleeves, ducts, pipes or other openings to pass through beams except where indicated or approved by Departmental Representative.
 - .2 Where approved by Departmental Representative, set sleeves, ties, pipe hangers and other inserts and openings as indicated or specified elsewhere. Sleeves not indicated must be approved by Departmental Representative.
 - .3 Do not eliminate or displace reinforcement to accommodate hardware. If inserts cannot be located as specified, obtain written approval of modifications from Departmental Representative before placing of concrete.
 - .4 Confirm locations and sizes of sleeves and openings shown on drawings.
- .3 Anchor bolts:
 - .1 Set anchor bolts to templates in co-ordination with appropriate trade prior to placing concrete.
 - .2 Grout anchor bolts in preformed holes or holes drilled after concrete has set only after receipt of approval from Departmental Representative.
 - .3 Protect anchor bolt holes from water accumulations, snow and ice build-ups.
- .4 Drainage holes and weep holes:
 - .1 Form weep holes and drainage holes in accordance with Section 03 10 00 - Concrete Forming and Accessories. If wood forms are used, remove them after concrete has set.

.5 Pouring joints:

- .1 Obtain Departmental Representative approval for any pouring joint which is not indicated on plans.

.6 Finishing:

- .1 Finish concrete to CSA A23.1. Broom finish required on rolling surfaces.

.7 Joint fillers:

- .1 Furnish filler for each joint in single piece for depth and width required for joint, unless otherwise authorized by Departmental Representative.

When more than one piece is required for joint, fasten abutting ends and hold securely to shape by stapling or other positive fastening.

- .2 Locate and execute construction joints as per indication. Install joint fillers.

- .8 Curing must meet the CSA A23.1 procedures. Humid cure is required for concrete slabs.

3.3 Surface tolerance

- .1 Concrete tolerance to CSA A23.1.

3.4 Field quality control

- .1 Site tests: conduct tests as follows in accordance with Section 01 45 00 - Quality Control
- .2 Department will pay for costs of tests as specified in Section 01 29 83 - Payment Procedures for Testing Laboratory Services.
- .3 Departmental Representative will take additional test cylinders during cold weather concreting. Cure cylinders on job site under same conditions as concrete which they represent.
- .4 Non-Destructive Methods for Testing Concrete: to CSA A23.2.
- .5 Inspection or testing by Departmental Representative will not augment or replace Contractor quality control nor relieve Contractor of his contractual responsibility.

END OF SECTION

PART 1 - GENERAL**1.1 Related requirements**

- .1 Section 03 20 00 – Concrete Reinforcing.
- .2 Section 03 30 00 – Cast-in-place Concrete.

1.2 References

- .1 Canadian Standards Association (CSA)/CSA International.
 - .1 CAN/CSA-A23.1/A23.2-Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete.

1.3 Definitions

- .1 Tremie concrete is placed underwater through a tube called tremie pipe.
- .2 Tremie pipe has a hopper at upper end and may be open ended or may have foot valve, plug or travelling plug to control flow of concrete.
 - .1 Concrete is placed in hopper and sufficient head of concrete is maintained in tremie pipe to provide desired rate of flow.
- .3 Pumped concrete method consist of placing concrete underwater using a concrete pump with discharge line used in similar manner to a tremie pipe.

1.4 Structures concerned

- .1 Structures concerned by this section are the pipes and junctions with existing structures.

PART 2 - PRODUCTS**2.1 Materials**

- .1 Concrete materials: to Section 03 30 00 - Cast-in-Place Concrete.

2.2 Mixes

- .1 Use mix as stated in Section 03 30 00 except if otherwise specified.

- .2 Anti-whashout admixtures and/or superplasticizers and/or other admixtures must be used to make underwater pouring possible without any piping clogging.
- .3 Contractor will have to adjust cement content, water/cement ratio, coarse granular size.
- .4 Contractor is responsible to supply concrete mix formulation to the Departmental Representative for examination.

PART 3 - EXECUTION

3.1 Preparation

- .1 Where concrete must bond to existing surfaces, clean surfaces just prior to starting concrete placement.
 - .1 Use water jets, mechanical scrapers or other means, and when quantities of mud or rock cuttings are present, remove by air lift.
- .2 As indicated on plans, pouring of piles which do not include a rock anchor will begin at the bottom of sea level. No cleaning of pile is required below the natural sea level.

3.2 Installation

- .1 Do concrete work in accordance with Section 03 30 00 - Cast-in-Place Concrete and to CAN/CSA-A23.1/A23.2. Testing for concrete to CAN/CSA-A23.1/A23.2, except where specified otherwise.
- .2 Where concrete placement extends above water surface, protect concrete from direct contact with air at temperature below 5 degrees Celsius in accordance with CAN/CSA-A23.1.
- .3 Place concrete in one continuous operation to full depth required. Pouring joints must have been previously approved by the Departmental Representative.
 - .1 Supply complete equipment for every phase of operation until the required elevation. Cast joints must be submitted to Departmental Representative prior pour.
 - .2 Provide sufficient supply of concrete to complete pour without interruption.
- .4 Take necessary measures to prevent concrete from being dropped in marine environment.
- .5 Tremie pipe method.
 - .1 Provide water-tight tremie pipe sized to allow free flow of concrete.
 - .2 Provide hopper at top of tremie pipe and provide a mean to raise and lower tremie pipe.
 - .3 Provide plug or foot valve at bottom of tremie pipe to permit initial filling of pipe with concrete.
 - .4 Provide minimum of one tremie pipe for every pile. Do not move tremie pipes laterally

through concrete.

- .5 Start concrete placement with full tremie pipe. Keep bottom of pipe buried minimum 900 mm in freshly placed concrete. Control rate of flow by varying depth of pipe bottom in concrete.
 - .6 If seal is lost, allowing water to enter pipe, withdraw pipe immediately. Refill pipe, and continue placing as specified.
 - .7 If tremie operation is interrupted so that horizontal construction joint has to be made, cut surface laitance by jetting, within 24 to 36 hours and remove loose material by pumping or air lifting before placing next lift.
 - .8 Do not vibrate, disturb or puddle concrete after placement.
- .6 Pumped concrete method.
- .1 Follow procedures as for tremie method in placing concrete using discharge line from concrete pump as tremie pipe.

END OF SECTION

PART 1 – GENERAL**1.1 Related requirements**

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Section 01 61 00 – Common Product Requirements.
- .3 Section 09 97 20 – Painting.

1.2 References

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM A 36/A 36M-1, Standard Specification for Structural Steel.
 - .2 ASTM A 307-07 B, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
 - .3 ASTM A 325-02, Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
 - .4 ASTM A 325M-05, Standard Specification for High-Strength Bolts for Structural Steel Joints.
 - .5 ASTM A 490M-00, Standard Specification for High-Strength Steel Bolts, Classes 10.9 and 10.9.3, for Structural Steel Joints (Metric).
- .2 Canadian Standard Association (CSA)/CSA International
 - .1 CSA G40.20/40.21-04 (R2009), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 CAN/CSA G164-M92 (R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .3 CSA S16-09, Design of Steel Structures.
 - .4 CSA W48-06, Filler Metals and Allied Materials for Metal Arc Welding.
 - .5 CSA W59-M03 (R2008)Welded Steel Construction (Metal Arc Welding)(Metric).
 - .6 CAN/CSA-S136-07 Steel structural cold-formed
- .3 Underwater weldings: ANSI/AWS D3.6

1.3 Action and informational submittals

- .1 Submit required shop drawings, including fabrication and erection drawings and bills of materials, in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data: Submit manufacturer's instructions, printed product literature and data sheets for sections, plates, pipe, tubing, bolts, and include product characteristics, performance criteria, physical size, finish and limitations.

- .3 Shop Drawings must indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories. Welding symbols in accordance with CSA W59.
- .4 Welding Methods Documents to be approved and stamped by the Canadian Welding Bureau, or a certified welding engineer.

1.4 Quality assurance

- .1 Submit certified test reports showing compliance with specified performance characteristics and physical properties.
 - .1 Test reports must mention chemical and physical properties of steel which will be used for works, and any other relevant detail.
 - .2 Test reports must be signed by a competent Canadian metallurgist allowed to practice in Canada.
 - .3 Certificates: Submit manufacturer signed documents, certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.5 Delivery, storage and handling

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

PART 2 – PRODUCTS

2.1 Materials

- .1 Steel sections: to CSA G40.20/G40.21, Grade 350W.
- .2 Steel plates: to CSA G40.20/G40.21, Grade 300W.
- .3 Anchor bolts: to ASTM A 307.
- .4 Bolts, nuts and washers: to grade A 325M according to ASTM F3125. Nuts lubricated according to A563.
- .5 Welding materials: to CSA W48 and CSA W59 and certified by the Canadian Welding Bureau. Conform to underwater welding requirements and AWS D 3.6.
- .6 Galvanization: Galvanized steel pieces must be by hot immersion process according to ASTM A123/123M.

2.2 Weldings

- .1 Welding out of water must be conform to CAN/CSA W59.

- .2 Under water weldings must be conform to ANSI/AWS D3.6. Weldings must be of type B.
- .3 Prior to works, obtain Harbour Master (Jean-Pierre Harisson) approval.

PART 3 – EXECUTION

3.1 General

- .1 Structural steel work: in accordance with CAN/CSA-S16 and CAN/CSA-S136.
- .2 Welding: in accordance with CSA W59 and AWS D 3.6.
- .3 Companies to be certified under Division 1 or 2.1 of CSA W47.1 for fusion welding of steel structures and/or CSA W55.3 for resistance welding of structural components.
- .4 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for metal fabrications installation in accordance with manufacturer's written instructions.
- .5 Visually inspect substrate in presence of Departmental Representative
- .6 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
- .7 Proceed with installation only after unacceptable conditions have been remedied.
- .8 Galvanization: Hot dipped galvanizing with zinc coating 600 g/m² to ASTM A123/123M.
 - .1 Galvanization must prior be completely removed on the surface to weld. Those weldings must then be galvanized (cold process) with a zinc paint.

3.2 Connection to existing work

- .1 Verify dimensions and condition of existing work, report discrepancies and potential problem areas to Departmental Representative for direction before commencing fabrication.

3.3 Erection

- .1 Erect structural steel, as indicated and in accordance with CAN/CSA-S16 CAN/CSA-S136 and in accordance with erection drawings. Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
- .2 Do welding work in accordance with CSA W59 unless specified otherwise.
- .3 Clean surfaces from dust and debris to Departmental Representative's satisfaction.

- .4 Validate structure components position and location of bolts prior to erection. Any discrepancies shall be brought to Departmental Representative's attention.
- .5 Minimize stress during erection to prevent holes deformation, torsion, flexion or warp of steel components.
 - .1 Bore holes as needed only if approved by engineer.
 - .2 Bored holes to be maximum 2 mm more than bolt diameter used.
- .6 During erection, structure shall be assembled in a way to resist dead loads, construction loads, wind or earthquake or any natural conditions loads and erection stress.
- .7 Field cutting or altering structural members to approval of Departmental Representative.
- .8 Place appropriate anchor bolts to elevations and locations indicated.
 - .1 Keep water and foreign matters from entering holes.
 - .2 Ensure heating and protection as indicated by Engineer and fully grout around anchor bolts.
 - .3 Clean with mechanical brush and touch up shop primer to bolts, rivets, welds and burned or scratched surfaces at completion of erection.

3.4 Tolerance

- .1 Admissible tolerances for bolt holes and rivets.
 - .1 Unless otherwise indicated by Engineer, holes diameter shall be maximum 2 mm more than bolt size.

3.5 Welding quality control and inspection

- .1 Give a written description of welding methods to Departmental Representative at least four (4) weeks prior to Works.
- .2 Department is allowed to proceed to quality control on weldings done on site. Tests fees will be on Department charge.
- .3 If quality control detects a default to repair, the welding will have to be fixed and controlled again. The Contractor will have to modify his method to eliminate defaults. The repair and second inspection will be at the Contractor charge.
- .4 Report to Departmental Representative any default in the material or any problem of erection on work site. Corrections will be realized at the Departmental Representative satisfaction.

END OF SECTION

PART 1 – GENERAL

1.1 Related sections

- .1 Section 01 33 00 – Submittal procedures.
- .2 Section 01 35 43 – Environmental procedures.

1.2 Work description

- .1 Works include, but not is not necessary limited to:
 - .1 Shop painting of wharf's bollards and on the site paint retouching.
- .2 All requirements of these specifications apply to painting works in shop or on site.

1.3 Standard, regulations, codes, publications

- .1 The Contractor must comply with the codes, standards and regulations, as well as with the good practice rules as recommended by the following associations, related to the Work to be executed. The federal laws and regulations prevail on the other codes and standards.
 - ANSI, American National Standards Institute
 - API, American Petroleum Institute
 - ASME, American Society of Mechanical Engineers
 - ASM, American Society for Metals
 - ASTM, American Society for Testing and Materials
 - AWWA, American Water Works Association
 - BNQ, Bureau de Normalisation du Québec
 - CNB, Code National du Bâtiment
 - CSA, Canadian Standards Association
 - CSST, Code de sécurité pour les travaux en construction
 - MENVIQ, Ministère de l'Environnement du Québec
 - NACE, National Association of Corrosion Engineers
 - NFPA, National Fire Protection Association
 - ONGC, Office des Normes du Gouvernement Canadien
 - SSPC, Steel Structures Painting Council
 - ULC, Underwriters Laboratory of Canada

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

- .2 Except when specifically indicated, execute the work according to the present specifications requirements and according to the products manufacturers' instructions.

1.4 Documents/samples to be submitted

- .1 Submit required technical data sheet as well as manufacturers' specifications and documentation regarding products, as per section 01 33 00.

PART 2 – PRODUCTS

2.1 Materials/supplies

- .1 For the bollards, coating consist in an epoxy paint (color choose by the owner) Interzone 485 type or equivalent, specially designed for marine environment and for abrasion caused by boat's docking lines.
- .2 The Contractor must make sure the selected paint complies with the environmental laws and standards.

PART 3 – EXECUTION

3.1 Surfaces preparation

- .1 Oxide removal
 1. When necessary, the rust layers should be removed with the appropriate hand or machine tools, without damaging the sound metal finish. The surfaces to be painted must be scraped by abrasive blasting according to standard SSPC-SP10.
 2. The Contractor must use traps and separators between the compressor and the air ducts so that the compressed air be oil free and condensed water free.
 3. The cleaned surfaces must comply with the requirements described in the NACE, SSPC and BNQ standards concerning the cleanliness criteria.
 4. The profile created by the abrasive blasting cleaning should have a roughness of 75 to 100 microns. The worn-out abrasive should not be reused.

5. The Contractor must make sure that the selected abrasive complies with the environmental laws and standards and he must make sure to recuperate the abrasive in order to avoid all pollution hazards.
6. When cleaning the sheet piles surfaces, the Contractor should provide adequate and safe shelters depending of the products used and waste expected (waterproof shelter with an in and out exits dust and wind proof), shelters provided of an immediate vacuum mechanism of residual dust/water, diluents, abrasives and other any residual polluted material, to be recuperate to avoid possible pollution. The vacuum cleaner must be of sufficient capacity to maintain the shelter at the atmospheric pressure.
7. An emergency kit to recover accidental spillage should be available on site at any time. Control the evacuation of salvage in a secure and safe way in accordance with the local authority's requirements.

.2 Final cleaning

1. After the abrasive blasting cleaning, the surface must be degreased in order to remove the dust and to dry it out before the paint application.
2. Work site waste (solids or liquids) and soiled materials (Ex. Empty cans, rags, masks, etc.) must be recover, store in a safe way (waterproof shelters, installed minimum 15 m away from water and away from traffic as well) and must be eliminated according to safety requirements.

3.2 Delay for paint applications

- .1 The paint must be applied immediately after the final cleaning phase. None of the cleaned surface will be painted after a maximum 4-hour delay. If this delay is exceeded, the Contractor must start over the cleaning operation for the surface to be painted.
- .2 However, if during this period the surface to be painted has been contaminated or dampened, the Contractor is also required to clean the surface accordingly in order to comply with the above-mentioned clauses of these specifications.
- .3 In such an instance, the surface should be cleaned with a water jet and also dry-air blasted so that it is dried out perfectly.

3.3 Paint application

.1 Paint preparation

1. Before starting the paint application, the Contractor must mix both components as follows:
 - .1 Properly stir component A with a mechanical mixer according to the manufacturer's specifications;
 - .2 Mix the whole component A with the whole component B and stir with a mechanical mixer according to the paint manufacturer's specifications;
 - .3 Mix preparation must be made just prior to the application, according to the manufacturer's specifications.

.2 Surface conditions before the paint application

1. The surface to be painted must be completely dry upon the paint application.

.3 Painting of the bollards

1. Follow the manufacturer's technical requirements to avoid cracking of paint layers.
2. Dilute paint after mixing of the 2 elements as advice by manufacturer to obtain a good viscosity to facilitate its application.
3. Apply a final minimum coat of 2000 sec/microns (2020 wet microns) of the product with a Graco airless pump type or its equivalent.

.4 The Contractor is informed by the article 3.8 of the present section to take all precautions to avoid environmental damages.

3.4 Climatic conditions

- .1 Upon the paint application, the surface to be painted must be at least 5°C above the dew-point, and the relative humidity should be lower than 85%. The mixing of the 2 components must be done when the room temperature is between 20°C and 30°C. The paint application must be done when the surface temperature is higher than 10°C. However, verify, in technical sheet, manufacturer's recommendations of both paints concerning paint application's constraints. The same conditions apply for the two components paint mixture preparation.
- .2 In the case climatic conditions change during the paint application, the works must be stopped immediately and the cleaned but non-painted surface must be prepared again so that it complies with the specifications before the paint application.

3.5 Equipment cleaning

- .1 The equipment must be cleaned immediately after use, with the thinner recommended by the paint manufacturer's specifications. The cleaning frequency depends on the weather and on the working and waiting periods during the day. Work site waste (solids or liquids) and soiled materials (Ex. Empty cans, rags, masks, etc.) must be recover, store in a safe way (waterproof shelters, installed minimum 15 m away from water and away from traffic as well) and must be eliminated according to safety requirements.

During the interruptions, the paint mixture must be continuously stirred up according to the paint manufacturer's specifications.

3.6 Paint storage

- .1 Both paint components, before being mixed, must be stored in sealed containers and in safe places, and the storage temperature should be maintained between 20° C and 35° C. If the storage temperature becomes lower than 20° C, the containers will not be used for the works, ask the manufacturer's endorsement for re using and inform the surveyor. The Contractor should verify with the paint manufacturer the particular storage specifications of his product. Products should be store at 15 m or more from water, in an area away from traffic, identified and protected from potential damage.

3.7 Safety measures during the works

- .1 The Contractor must require from the manufacturer the technical data sheet of the paint and must give copy of this data sheet to the Department Representative. He must be sure to comply with the storage and handling safety regulations to avoid any work hazard on the site.

3.8 Property damage

- .1 All property damages due to the action or omission of the Contractor during the works, whether it is to the owner's property or to the wharf users' property, will be repaired and paid for by the Contractor.
- .2 The Contractor must cover the installation to avoid dust infiltrations during the abrasive blasting cleaning, and he must provide some shelters depending on the winds direction.

- .3 During the sheet piling cleaning, the Contractor must provide an adequate sheltering system equipped with a dust vacuum cleaner in order to recuperate the abrasive used and the dust so as to avoid any pollution. The vacuum cleaners should have a sufficient power to compensate for the compressed air introduced inside the shelter during the works.
- .4 During the touching-up of a paint coating on the site, the Contractor must immediately proceed with appropriate cleaning if a product is spilled.
- .5 During on site paint application, the Contractor must provide appropriate shelters in order to avoid any paint spillage in the sea-water or on the wharf. If a spillage occurs, the Contractor must immediately clean, either it be in the sea-water or on the wharf.

3.9 Working equipment

- .1 The Contractor must provide all the necessary equipment for the work he has to do. The owner is not committed to supply any equipment to the Contractor for the works execution.
- .2 Also, the Contractor must make sure that his equipment is safe for his own employees as well as for other people who will have access to the wharf during the works.

3.10 Site cleanliness and harbour activities

- .1 The Contractor should maintain the site in a good and clean condition. He must provide a garbage container. This container must be located outside of the wharf site.

3.11 Paint technical data sheet

- .1 The Contractor must take into account all the paint technical specifications and comply with the paint manufacturer's requirements. The paint's technical sheet is part of present specifications. In case of an incompatibility between the paint technical data sheet and the present specifications, immediately contact the Department Representative before beginning the work. In case of discordance between the present specifications and the paint technical data sheet, the most severe criterion applies for the work execution

3.12 Appraisal procedure

- .1 The appraisal of the paint application performance will be made through inspections during the works and at the end of the works.

3.13 Working schedule

- .1 In order to insure a better quality of the works, the Department Representative can demand that the Contractor pursues his work according to a working schedule different from the one provided by the Contractor.

3.14 Inspection after the end of the works

- .1 The paint application will be inspected one year after the works will have been completed.
- .2 The inspection will be made by the owner's representatives, by the Department Representative, and by the Contractor. For this inspection, the Contractor must pay for his representative's incurred expenses. The Contractor must therefore include in his bid for two days minimum on the site, considering the tide and climatic conditions constraints.
- .3 Any pain damages that will be noted will be repaired by the Contractor's own cost, except for any paint damages due to the ships rubbing or hitting the wharf.
- .4 The repairs should be made by the Contractor during the same year, except if the climatic conditions do not allow it. In such a case, the repairs will be made during the next summer.
- .5 These repairs form an integral part of the contractual clauses of the present specifications and all the clauses of the present specifications also apply for the repairs works.

END OF SECTION

PART 1 – GENERAL

1.1 Related requirements

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Section 05 50 00 – Metal fabrication.
- .3 Section 31 61 16 – Pile foundations – General requirements.

1.2 References

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM A 252-98(2002), Standard Specification for Welded and Seamless Steel Pipe Piles.
 - .2 ASTM A 307-04, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile.
 - .3 ASTM A 325M-05, Standard Specification for Structural Steel Bolts, Steel, Heat Treated 830 Mpa Minimum Tensile Strength [Metric].
- .2 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-G40.20/G40.21-2004, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steels.
 - .2 CAN/CSA-S16-01, Consolidated (Consists of the CAN/CSA-S16-01, along with S16S1-05 and Updates # 1 and # 2 to CAN/CSA-S16-01).
 - .1 CAN/CSA-S16-01, Limit States Design of Steel Structures.
 - .3 CSA W47.1-03, Certification of Companies for Fusion Welding of Steel Structures.
 - .4 CSA W48-01(R2006), Filler Metals and Allied Materials for Metal Arc Welding.
 - .5 CSA W59-03, Welded Steel Construction (Metal Arc Welding) (metric version).

1.3 System description

- .1 Design Requirements: design templates to safely withstand following loads:
 - .1 Gravity loads to which template are subjected.
 - .2 Lateral loads to firmly hold pile in position when driving.

1.4 Action and informational submittals

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

- .2 Submit shop drawings and indicate following items:
 - .1 Material.
 - .2 Template plan.
 - .3 Anchorage, field control and alignment methods for piles and sheet piling.
 - .4 Tolerance for driving pile and sheet piling.

PART 2 - PRODUCTS

2.1 Materials

- .1 Steel sections and plates: to CAN/CSA-G40.20/G40.21, Type 300W and 350W.
- .2 Welding materials: to CSA W48 and CSA W59.
- .3 Bolts, nuts and washers: to ASTM A 307 and ASTM A 325M.

2.2 Fabrication

- .1 Fabricate structural steel for templates: to CAN/CSA-S16 as indicated on shop drawings.
- .2 Welding: to CSA W59.
- .3 Use welding companies qualified under CSA W47.1.

PART 3 - EXECUTION

3.1 Positioning

- .1 Position and hold template in location to receive piles and sheet piling.
 - .1 Ensure pile positions are within tolerances specified.

3.2 Removal of templates

- .1 Avoid damage to piling when removing templates.
- .2 When instructed by Departmental Representative, remove templates from Project site.

END OF SECTION

PART 1 – GENERAL

1.1 Related requirements

- .1 Section 01 33 00 – Submittal Procedures
- .2 Section 01 56 00 – Temporary barriers and enclosures
- .3 Section 01 74 21 – Construction/Demolition Waste Management and Disposal
- .4 Section 01 35 43 – Environmental Procedures
- .5 Section 02 41 16 - Demolition

1.2 Protection of existing structures

- .1 Protect existing structures in accordance with Section 01 56 00 – Temporary barriers and enclosures and local regulations that apply.

PART 2 – PRODUCTS

2.1 Materials

No object

PART 3 – EXECUTION

3.1 Site preparation

- .1 Plans and specifications have been designed for service loads, without any consideration for constructions loads. Contractor is responsible of its construction method and must ensure that wharf stability and structures around are not compromised, and that at each step of works. In any case, the work method at each step of work must be designed considering all loads, including equipment loads. Contract will have to submit its working method in a signed and sealed (OIQ Engineer) document.

3.2 Excavation

- .1 Excavation works consist in displacement or existing rip rap, if required for pilling and replacement of this rip rap as before works regarding detail and slopes.
- .2 Excavate in a way to ensure existing rip rap stability.

- .3 Excavation must not modify structural capacity of existing structures.
- .4 Details provided regarding rip rap are given as an indication and are not necessarily exact or completed.
- .5 Dispose of obstruction excavated material off site if not reusable.
- .6 Wharf construction plans indicate 1-3 tons rip rap at the pile bottom. Rip rap could be to displace temporary, for pile installation.

3.3 Backfilling

- .1 Do not proceed with backfilling operations prior to approval by Departmental Representative
- .2 Do not use backfill material which is frozen or contains ice, snow or debris.

3.4 Restoration

- .1 Upon completion of Work, remove waste materials and debris in accordance to Section 01 74 21 - Construction/Demolition Waste Management and Disposal. Correct slopes and defects as directed by the Departmental Representative.
- .2 Clean and reinstate areas affected by Work as directed by Departmental Representative.

END OF SECTION

PART 1 – GENERAL

1.1 Related requirements

- .1 Section 01 33 00 – Submittal Procedures
- .2 Section 01 61 00 – Common product requirements
- .3 Section 31 62 16.19 – Tubular steel pipes.

1.2 Action and informational submittals

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit schedule of planned sequence of driving to Departmental Representative for review, as specified.
- .3 Equipment:
 - .1 Submit prior to piles installation for review by Departmental Representative list and details of equipment for use in installation of piles.
 - .2 Impact hammers: submit manufacturer's written data as specified.
 - .3 Non-impact methods; submit characteristics to evaluate performance.
 - .4 Submit driveability analysis as specified, to Departmental Representative for approval of hammers.

1.3 Delivery, storage and handling

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and manufacturer's instructions.
- .2 Protect piles from damage due to excessive bending stresses, impact, abrasion or other causes during delivery, storage and handling.
- .3 Replace damaged piles as directed by Departmental Representative.

1.4 Existing conditions

- .1 Contractor must refer to all geotechnical information on plans.
- .2 Notify Departmental Representative in writing if subsurface conditions at site differ from those indicated and await further instructions from Departmental Representative

PART 2 – PRODUCTS

2.1 Materials

- .1 Material requirements for piles installation are specified in sections 31 62 16.19 – Tubular steel pipes.

2.2 Equipment

- .1 Impact hammers: provide manufacturer's name, type, rated energy per blow at normal working rate, mass of striking parts of hammer, mass of driving cap and type and elastic properties of hammer and piles cushions.
- .2 Non-impact methods of installation such as vibratory hammers or other means provide full details of characteristics necessary to evaluate performance.
- .3 Hammer:
 - .1 Hammers to be selected on basis of driveability analysis using wave equation theory, performed to show that piles can be driven to levels indicated.
 - .2 Driveability analysis to include, but not be limited to, following: hammer, cushion, and cap block details; static soil parameters; quake and damping factors, total soil resistance, blow count, piles stresses and energy throughput at representative penetrations.
 - .3 When required criteria cannot be achieved with the proposed hammer, use larger hammer and take other measures as required.

PART 3 - EXECUTION

3.1 Preparation

- .1 Ensure that ground conditions at piles locations are adequate to support piles driving operation and load testing operation. Make provision for access and support of piling equipment during performance of Work.
- .2 Followers:
 - .1 Provide followers of such size, shape, length and mass to permit driving piles in desired location to required depth and resistance. Provide followers with socket or hood carefully fitted to top of piles to minimize loss of energy and prevent damage to piles.

3.2 Application / driving

- .1 Use driving caps and cushions to protect piles.
Piles with damaged heads as determined by Departmental Representative will be rejected.
- .2 Hold piles securely and accurately in position while driving.
- .3 Deliver hammer blows along axis of piles.
- .4 Restrike already driven piles lifted during driving of adjacent piles to assure set.
- .5 The pile installation must be examined by the Departmental Representative.
 - .1 The Departmental Representative will be the only judge to decide if each pile is accepted regarding the final depth.
- .6 Each pile must be driven until one of those condition is encountered:
 - .1 Pile driving refusal with a properly operating hammer is defined as the point where pile driving resistance exceeds either 300 blows per foot (0.3 m) for five consecutive feet (1.5 m) or 800 blows per foot (0.3 m) of penetration (This definition applies when the weight of the pile does not exceed four times the weight of the hammer ram. If the pile weight exceeds this, the above blow counts are increased proportionally, but in no case shall they exceed 800 blows for six inches [152 mm] of penetration.)
 - .2 Contractor must demonstrate that each pile has a sufficient capacity to take with security a factored load of 700 kN.
- .7 Cut off piles neatly and squarely at elevations as indicated.
- .8 Remove cut-off lengths from site on completion of work.

3.3 Driving tolerances

- .1 Piles heads to be within 25 mm of locations as indicated. An accurate installation is required to allow installation of concrete massif without any modification.

3.4 Obstructions

- .1 Where obstruction is encountered that causes sudden unexpected change in penetration resistance or deviation from specified tolerances, remove obstruction

3.5 Repair and restoration

- .1 Pull out rejected piles and replace with new piles.
- .2 No extra compensation will be made for removing and replacing or other work made necessary through rejection of defective piles.

3.6 Field quality control

- .1 Maintain accurate records of driving for each piles, including:
 - .1 Type and make of hammer, stroke or related energy.
 - .2 Other driving equipment including water jet, driving cap, cushion.
 - .3 Piles size and length, location of piles in piles group, location or designation of piles group.
 - .4 Sequence of driving piles in group.
 - .5 Number of blows per meter for entire length of piles.
 - .6 Final tip and cut-off elevations.
 - .7 Other pertinent information such as interruption of continuous driving, piles damage.
 - .8 Record elevation taken on adjacent piles before and after driving of each piles.
- .2 Provide Departmental Representative with one copy of records.

END OF SECTION

PART 1 – GENERAL

1.1 Related requirements

- .1 Section 01 33 00 – Submittal procedures.
- .2 Section 01 61 00 – Common Product Requirements
- .3 Section 31 23 33.01 – Excavation and Backfilling
- .4 Section 31 61 13 – Piles foundations – General requirements.
- .5 Section 03 20 00 – Concrete reinforcing.
- .6 Section 03 30 00 – Cast-in-place concrete
- .7 Section 03 37 26 – Underwater placed concrete.
- .8 Section 05 50 00 – Metal Fabrications

1.2 References

- .1 Canadian Standards Association (CSA International)
 - .1 CSA-G40.20/G40.21-F2004, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 CSA W47.1-F03, Certification of Companies for Fusion Welding of Steel Structures.
 - .3 CSA W48-06, Filler Metals and Allied Materials for Metal Arc Welding.

1.3 Delivery, storage, and handling

- .1 Deliver, store and handle in accordance with Section 01 61 00 - Common Product Requirements. Take into account that piles will be supplied to the Contractor.
- .2 Make sure the stress exercised during the handling and the installation remain below acceptable thresholds.
- .3 Avoid damaging piles during handling, insertion in the templates and driving process.
- .4 Support piles to avoid excessive flexion stress during the driving process.
- .5 Square, with regard to its longitudinal axis, the head of the pile.
 - .1 Hold the axial alignment of the driving equipment with the pile axis.

PART 2 - PRODUCTS**2.1 Materials**

- .1 Steel pile caps: to CSA-G40.20/G40.21, Grade 350W and Grade 300W (steel plates).
- .2 Welding electrodes: to CSA W48 series.
- .3 Concrete: in accordance with Section 03 30 00 - Cast-in-Place Concrete and 03 37 26 – Underwater placed concrete.
- .4 Reinforcing steel: in accordance with Section 03 20 00 - Concrete Reinforcing

PART 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 datasheets.

3.2 Fabrication

- .1 In case an additional weld is required on construction site, only one single circumferential weld will be accepted. This implies that the pile can only be spliced with two sections of pile, considering that the supplied pipe is considered as one section (even if a welding has been realized in shop).
- .2 All weldings realized on piles by the Contractor must be inspected by an Engineer specialized in metallurgic quality control. This control is at contractor's expense. A written report will be submit to Departmental Representative 48 hours after the writing.
- .3 Notify that in case of splicing, the Departmental Representative reserves the right to proceed with a complete quality control of the welds. This control will be at the expense of the Departmental Representative. In case of rejection of the weld, the subsequent quality controls will be at the Contractor's expense.
- .4 Submit details of planned use of pile material stock to Departmental Representative for approval prior to start of fabrication.
- .5 Repair defective welds as approved by Departmental Representative and to CSA W59 standard. Unauthorized weld repairs may be rejected.

3.3 Installation

- .1 Install piling in accordance with Section 31 61 13 – Pile/sheet piling Foundations, General Requirements.
- .2 If approved by Departmental Representative, splice piles in place during installation by welding. To prevent distortion, tack opposite points first and then weld opposite sections. Hold members in alignment during splicing operation.
- .3 Perform internal visual inspection of steel pipe, joints and base prior to placing of concrete. Ensure pipe inside is free from foreign matter.
- .4 Assemble and install reinforcement cages as indicated.
- .5 Install concrete in accordance with Section 03 37 26 – Underwater Placed Concrete.
- .6 Fill steel pipe pile with concrete using methods to limit free fall and to prevent segregation. Ensure adequate vibration to completely fill cross section of pipe. Ensure adequate vibration to completely fill cross section of pipe.
- .7 Install reinforcement cages as indicated in shop drawings. Secure until concrete is set.
- .8 Install pile caps as indicated.
- .9 Reinforcements can be weld to piles in shop.

3.4 Welding

- .1 Weld to CSA W59.
- .2 Welding certification of companies: to CSA W47.1.

END OF SECTION

PART 1 – GENERAL

1.1 Related sections

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Section 01 74 21 – Construction/Demolition Waste Management and disposal.

1.2 References

- .1 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
- .2 Quebec Government, Ministry of Transportation
 - .1 Cahier des charges et devis généraux (CCDG)-last édition.

1.3 Samples

- .1 Submit samples as required regarding section 01 33 00 – Submittal Procedures.
- .2 Submit to Departmental Representative at least 3 weeks prior to works, samples of materials for granular analysis.

1.4 Waste management

- .1 Sort and recycle waste as related in section Section 01 74 21 – Construction/Demolition Waste Management and disposal.
- .2 Bring unused asphalt materials to an adequate recycling installation.

PART 2 – PRODUCTS

2.1 Materials

- .1 Aggregates to: in accordance with CCDG.
- .2 Prime coat: RC-30, in accordance with CCDG.
- .3 Tack coat: SS-1, in accordance with CCDG.
- .4 Asphalt, in accordance with CCDG.

- .5 Asphalt bond: PG 58-34 type.

PART 3 – EXECUTION

3.1 Pavement thickness

- .1 Pavement: on single layer of ESG-14, 75 mm thickness

3.2 Pavement construction

- .1 Surface preparation: CCDG.
- .2 Application of prime coat and tack coat: CCDG.
- .3 Construction of asphalt concrete: CCDG.

END OF SECTION

PART 1 – GENERAL

1.1 Related requirements

- .1 Section 01 33 00 – Submittal procedures.
- .2 Section 09 97 20 – Painting.

1.2 References

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM A 27/A 27M-16, Standard Specification for Steel Castings, Carbon, for General Application.
 - .2 ASTM A536-84(R 2014), Standard Specification for Ductile Iron Castings.
 - .3 ASTM E709-15, Standard Guide for Magnetic Particle Testing.
 - .4 ASTM E689-15, (Standard Reference Radiographs for Ductile Iron Castings).

1.3 Shop drawings

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product data: submit manufacturer's printed product literature, specifications and datasheet.
- .3 Submit shop drawings, indicating following items:
 - .1 Mooring devices details, including dimensions and installation procedures.
 - .2 Locations, sizes and installation tolerances of anchor bolts.
 - .3 Capacity of mooring devices.

PART 2 – PRODUCTS

2.1 Materials

- .1 Bollards: in cast iron type 65-45-12, in conformity with ASTM A536.
 - .1 Maximum working pull: 50 tons.
 - .2 It is an obligation that the bollard meets the geometrical specifications mentioned on plans. This is also an obligation for the bolting circle.
- .2 Paint: as per section 09 97 20– Painting.
- .3 Grout: shrinkage (if required by the bollard manufacturer) compensating non-metallic.

2.2 Quality control

- .1 The Departmental Representative reserves the right to proceed to destructive or non-destructive tests. The tests will be at the expense of the Departmental Representative, unless the results show a non-compliance of mooring devices as per the plans and specifications. The Contractor shall supply the manufacturing schedule of the mooring devices to the Departmental Representative.
- .2 The Contractor shall supply to the Departmental Representative the steel certificates, test results for each casting in conformity with current standards and provide assistance necessary for additional testing free of charge to the Department's Representative.
- .3 Visual magnetic particles inspections: All accessible surfaces of mooring devices must be visually inspected and magnetic particles tested as per the latest edition of ASTM E709 standard. No abrupt (steep) section change will be tolerated.
 - .1 Mooring device surface of borders shall be smooth, free of sand, slag, crack or the other harmful defect.
 - .2 Visual and magnetic particles inspections acceptance criteria are as per ASME, section VIII, Division 1, Appendix 6 standard, latest edition.
- .4 Radiography: if the visual and/or magnetic particles inspections show signs of defects, the base plate and neck of one out of three identical model mooring device must be verified by radiography, at the Contractor's expense.
 - .1 X-rays must be compared with ASTM E689 standard (Standard Reference Radiographs for Ductile Iron Castings).
- .5 If the control inspection reveals a defect, the defective part will be discarded or the Contractor will propose a repair method to satisfaction of the Departmental Representative. Such repairs and all other inspections of the defective part will be at the Contractor's expense.

PART 3 – EXECUTION

3.1 Setting and grouting

- .1 Set mooring devices at locations and elevations as indicated.
 - .1 After tightening of anchor bolts or positioning wedges in conformity with current standards, grout under base as specified by the manufacturer.
 - .2 Ensure that temperatures of foundation, air, base and grout are within range specified by grout manufacturer.
- .2 Do not grout until location of anchor bolts, bollards and cleats have been approved by Departmental Representative.

END OF SECTION