



**Public Works And Government Services
Canada**

**Wharf Extension, Reinforcement, and New
fenders
CAP-AUX-MEULES, QUÉBEC, CANADA**

Ref. : R.144048.001

**TECHNICAL SPECIFICATIONS
FOR SUBMISSION**

DATE : 23 September 2021

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Part 1 General

1.1 WORK COVERED BY CONTRACT DOCUMENTS

- .1 Work of this Contract comprises the construction of the wharf extension works and upgrades at Cap-Aux-Meules as detailed in the tender drawings. The works consists of the following:
 - .1 Refurbishment and upgrade of the existing wharf;
 - .2 Construction of a new turning dolphin;
 - .3 Design and construction of an aluminum catwalk that will connect the existing wharf to the new dolphin;
 - .4 Removal and salvage of the existing berthing fenders, and a portion of the existing mooring bollards;
 - .5 Installation of new mooring bollards and berthing fenders.

1.2 WORK BY OTHERS

- .1 Co-operate and coordinate with Contractors in charge of the construction of the fixed ramp which are intended to begin prior to the present Contract. If any part of work under this Contract depends for its proper execution or result upon work of another Contractor, report promptly to Departmental Representative, in writing, any defects which may interfere with proper execution of Work.
- .2 Work of Project executed prior to start of and during Work of this Contract, and which is specifically excluded from this Contract:
 - .1 Fender system supply;
 - .2 Bollard system supply;
 - .3 Fixed Ramp construction.

1.3 FUTURE WORK

- .1 Ensure that Work avoids encroachment into areas required for future work.

1.4 WORK SEQUENCE

- .1 Construct Work in stages to accommodate Owner's continued use of the wharf during construction.
- .2 Co-ordinate Progress Schedule and co-ordinate with Owner Occupancy during construction.
- .3 Maintain fire access/control.

1.5 CONTRACTOR USE OF PREMISES

- .1 Limit use of premises for storage, Work, and access to allow:
 - .1 Owner occupancy and operations.
- .2 Co-ordinate use of premises under direction of Departmental Representative.

- .3 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.
- .4 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
- .5 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Departmental Representative.
- .6 At completion of operations condition of existing work: equal to or better than that which existed before new work started.

1.6 OWNER OCCUPANCY

- .1 Owner will occupy premises during entire construction period for execution of normal port operations.
- .2 Co-operate with Departmental Representative in scheduling operations to minimize conflict and to facilitate Owner usage.

1.7 PRE-ORDERED PRODUCTS/PRE-BID WORK

- .1 Departmental Representative has pre-ordered products with suppliers for specific products, to expedite Work and for other purposes in Canada's interests.
- .2 Contractor responsibility for purchase, handling, and installation for pre-ordered products is same as for other Contractor-furnished products.
- .3 Schedule of Pre-ordered Products.
 - .1 Fenders Systems: December 21st 2021
 - .2 Bollards Systems: December 21st 2021
- .4 Obtain necessary shop drawings from Departmental Representative for inclusion in maintenance manual in accordance with Section 01 33 00- Submittal Procedures.

1.8 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING STRUCTURES

- .1 Execute work with least possible interference or disturbance to wharf operations. Arrange with Departmental Representative to facilitate execution of work.
- .2 Accept liability for damage, safety of equipment and overloading of existing equipment.
- .3 Repair any damage resulting from any activities performed under this contract.

1.9 EXISTING SERVICES

- .1 Before the commencement of work, establish the location and extent of service lines in the work area and notify the Departmental Representative of the findings.
- .2 Notify, Departmental Representative and utility companies of intended interruption of services and obtain required permission.
- .3 Where Work involves intrusion, breaking into, or connecting to existing services, give Departmental Representative 48 hours notice for necessary interruption of mechanical or electrical service throughout course of work. Minimize duration of interruptions. Carry

out work at times as directed by governing authorities with minimum disturbance to operations.

- .4 Provide alternative routes for personnel, pedestrian, and vehicular traffic.
- .5 Establish location and extent of service lines in area of work before starting Work. Notify Departmental Representative of findings.
- .6 Submit schedule to and obtain approval from Departmental Representative for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.
- .7 Provide temporary services when directed by Departmental Representative to maintain critical systems to operations.
- .8 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.
- .9 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.
- .10 Record locations of maintained, re-routed and abandoned service lines.

1.10 DOCUMENTS REQUIRED

- .1 Maintain at job site, one (1) 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 Manufacturer's installation and application
 - .12 Instructions.
 - .13 Other documents as specified.

1.11 SITE CONDITIONS

- .1 A geotechnical report dated from 1969 as well as borehole logs completed in 2021 are appended to the specifications.
- .2 Record drawings of existing pier structure are attached as appendices.
- .3 The work must be planned and executed in such a way as to be coordinated with the constraints of the site. Accessibility and the specific conditions of the site are described in the specifications and contain, among others, the following elements:
 - .1 Land access: Access limited by the capacity and width of the existing pier.

- .2 Maritime access: full port operations on all surrounding piers and limited access to the east side of the new ferry dock due to the presence of an existing breakwater.
- .4 The contractor must coordinate the work on the site to ensure compliance with all applicable specifications

1.12 WORK SCHEDULE AND COMPLETION DATES

- .1 Prepare and submit to the Departmental Representative within five (5) days of the bid acceptance, one (1) copy of the construction schedule, in the form of a bar chart, showing the dates for commencement and completion of each major activity of the work, including the work of subcontractors; dates of submissions, review and return of all drawings, etc.; the dates of Substantial Completion; and intended man hours of labour and equipment for each major items of work. If the schedule as submitted is unacceptable in any way, submit without delay a revised schedule satisfactory to the Departmental Representative.
- .2 The Departmental Representative is to notify the Contractor in writing of acceptance of the Construction Schedule. Comply with the Dates of the Construction Schedule at all times. If, for any reason the Construction Schedule is not followed, immediately notify the Departmental Representative of the changes and submit a revised schedule for acceptance. Upon written acceptance by the Departmental Representative, this schedule will become the Construction Schedule.
- .3 Whenever required, give further written particulars concerning this schedule. The submission to and acceptance by the Departmental Representative of the Contractor's Construction Schedule or the providing of details and particulars thereto will not relieve the Contractor of any duties and responsibilities under the Contract.

1.13 MEASUREMENT RESPONSIBILITIES

- .1 Notify Departmental Representative sufficiently in advance of operations to permit required measurements for payment purposes.

1.14 CONTRACTOR'S USE OF SITE

- .1 Cooperate and coordinate with the ferry terminal operator, Cooperative de Transport Maritime et Aerien (CTMA) and harbour users. Provide daily communication to users detailing the days proposed construction activities. Minimize impacts to other users whenever possible.
- .2 Access to the existing wharf structure must be maintained throughout construction. Ferry vessels will continue to use the wharf structure for berthing and mooring. The existing transfer bridge will not be used throughout construction. Access for crew and emergency vehicles to vessel and wharf must be maintained at all times.
- .3 Harbour will be active with ferry traffic throughout construction. Ferry schedule can be found at the following website: traversierctma.ca
- .4 Should interferences occur, take directions from Departmental Representative.
- .5 Do not unreasonably encumber site with materials or equipment.
- .6 Move stored products or equipment which interfere with operations of Departmental Representative or other Contractors.

- .7 Obtain and pay for use of additional storage or work areas needed for operations.
- .8 Provide temporary barriers and warning signs in location where work is adjacent to areas used by public.
- .9 Provide and implement an approved traffic control plan.

1.15 PROJECT MEETINGS

- .1 Departmental Representative will arrange project meetings and assume responsibility for setting times and recording and distributing minutes.

1.16 PRELIMINARY WORK

- .1 Do all detail surveys necessary for the work, including locating and maintaining working points, and establishing lines and elevations. Perform all layout work, and carefully preserve benchmarks, reference points and stakes.
- .2 Elevations for the various features of the specified works to be referenced and properly related to a benchmark, which will be approved by the Departmental Representative.
- .3 Verify all grades, lines, levels, and dimensions shown on the drawings and report any errors or inconsistencies to the Departmental Representative before commencing work. Establish all grades, lines, levels required to facilitate the work.

1.17 TRAFFIC CONTROL

- .1 Provide traffic control in accordance with Traffic Control Devices Volume 5 as issued by Ministère du Travail, de l'Emploi et de la Solidarité sociale.
- .2 In urban areas, consult with local authorities having jurisdiction for possible additional or special requirements.
- .3 Meet with local authorities having jurisdiction prior to start of construction to determine allowable diversions of traffic, pedestrian and access to construction area.
- .4 Provide traffic control personnel, signals, lights, and other traffic control methods where required.
- .5 Provide and maintain signs, delineators, barricades, barriers, and miscellaneous warning devices to indicate construction activities or other temporary and unusual conditions.

1.18 CONTRACT DOCUMENTS

- .1 Contract Specifications:
 - .1 They are organized into the NMS format of separate divisions and sections.
 - .2 Specification language is the "Short Form Type", for example, where the word "provide" occurs, interpret it to mean "the Contractor shall furnish all labour, material and equipment necessary to complete the work".

1.19 CUTTING, FITTING

- .1 Execute cutting (including excavation), fitting & Patching and patching required to make work fit properly.
- .2 Make cuts with clean, true, smooth edges. Make patches inconspicuous in final assembly.

- .3 Where new work connects with existing and where existing work is altered, cut, patch and ensure flush transitions between new and existing work.
- .4 Obtain the Departmental Representative's approval before cutting, boring or sleeving, or excavating adjacent to load-bearing members.

1.20 RECORD OF CONSTRUCTION

- .1 As work progresses, maintain accurate records to show all deviations from the drawings, with particular reference to work which will be concealed. Prior to the inspection of the work for the issuance of the Final Certificate of Completion, provide the Departmental Representative with one set of white prints of the drawings with all deviations shown neatly thereon.
- .2 Provide "as built" cross sections of any excavation, dredging or fill work.

1.21 PAYMENT

- .1 See Section 01 29 00 for work item payment breakdown.

1.22 MAINTENANCE OF NAVIGATION ACTIVITIES

- .1 Liaise with the local port officials to coordinate activities such that any interference is minimized.

1.23 COOPERATION AND ASSISTANCE TO DEPARTMENTAL REPRESENTATIVE

- .1 Co-operate with Departmental Representative at all time.
- .2 Provide assistance when requested.
- .3 Provide small motorboat with operator for Departmental Representative's use when requested.

1.24 DATUM

- .1 The datum referred to in this Specification is Chart Datum. Chart Datum is, by International Agreement a plane below which the tide will seldom fall. The Canadian Hydrographic Service has adopted the plane of the lowest normal tide (L.N.T.) as Chart Datum. As the rise, fall and range of tides varies daily, the Canadian Tide and Current Tables, as issued by the Canadian Hydrographic Service, should be consulted for tidal predictions and other tidal information relating to work.

1.25 LOCATION OF EQUIPMENT AND FIXTURES

- .1 Location of equipment, fixtures or any and appurtenances indicated are to be considered approximate.

1.26 INSPECTION AND TESTING

- .1 The Departmental Representative may employ an Inspector and/or Testing Company to ensure work conforms with contracts.

1.27 DEBRIS DISPOSAL

- .1 Materials resulting from the work will not be allowed to drift or otherwise become a threat to navigation.

1.28 TEMPORARY NAVIGATIONAL BUOYS

- .1 Confirm with Transport Canada and adhere to the Navigation Protection Act.
- .2 Maintain existing navigation light for use as a temporary navigation light to mark the position of the outer end of the structure as construction proceeds. Navigation light is to meet the requirements of Canadian Coast Guard Standard TP968 and be equipped with radar reflectors.
- .3 Maintain temporary floating buoys at 30m intervals along the seaward face (maximum 10m offset) of the work area as construction proceeds. Place the yellow cautionary buoy farthest from the shoreward end of the wharf and 20m from ongoing construction. It must carry the following:
 - .1 Radar reflector.
 - .2 2nm amber light displaying characteristic (Fl) 4S from dusk to dawn and during periods of reduced visibility.
- .4 Coordinate the navigation light installation with the local Harbour Authority, ferry operator and the Departmental Representative.
- .5 Contractor is responsible for all costs associated with the supply, installation and removal of all temporary navigation light.
- .6 A minimum of two (2) cautionary spar buoys will be required during construction.

1.29 OPERATIONS AND MAINTENANCE DATA

- .1 Submit Operations and Maintenance data in accordance with the requirements set forth in Section 01 33 00 – Submissions/Shop Drawing; and for any Section in these Specifications that require operation and maintenance data to be submitted.
- .2 Provide cut sheets, manufacturer's literature, spare part information, maintenance schedules, operational data and any other material deemed useful by the Departmental Representative.
- .3 Provide three (3) hard copies and one (1) electronic copy of all Operation and Maintenance data to the Departmental Representative.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 EXEMPTION FROM HARBOUR DUES FOR CONTRACTORS NOT USED

- .1 For the period of the Contract, and exclusively in relation with the corresponding works, the Contractor will be exempt from the fees charged to public ports and public port facilities owned by Transport Canada, i.e., berthage fees, storage fees (at the locations defined by the Departmental Representative), harbour dues and wharfage and transfer fees applicable to the marine facilities subject to the works
(<https://tc.canada.ca/en/marine-transportation/ports-harbours-anchorage/charges-services-public-ports-owned-transport-canada>).

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 11 00 – Summary of work

1.2 ACCESS AND EGRESS

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

1.3 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Departmental Representative to facilitate work as stated. Management of communication with CTMA will be defined with the Departmental Representative during the kick-off meeting.
- .2 Maintain existing services to wharf operations and provide for personnel, users, and vehicle access.
- .3 Where security is reduced by work provide temporary means to maintain security.
- .4 Closures: protect work temporarily until permanent enclosures are completed.

1.4 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

- .1 Execute work with least possible interference or disturbance to wharf operations and normal use of premises. Arrange with Departmental Representative to facilitate execution of work.

1.5 EXISTING SERVICES

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

1.6 SPECIAL REQUIREMENTS

- .1 Ensure Contractor's personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.
- .2 Keep within limits of work and avenues of ingress and egress.

1.7 BUILDING SMOKING ENVIRONMENT

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

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 HOURLY RATES LISTING

- .1 Ten (10) days after the notice of the acceptance of the offer, the Contractor shall submit in writing to the departmental representative, the list of hourly rates for labour, equipment and machinery required to carry out the work.
 - .1 The hourly rates for all labour, equipment and machinery will be representative of the market and from reference works recognized in the industry, including:
 - .1 Rental rates for labour, equipment and tools of the Government of Quebec's Centre de services partagés.
 - .2 Hourly rates for labour costs of the construction industry of Quebec available on the Web sites of the ACQ and CCQ.
 - .3 Directory labour cost published by the Corporation of the general contractors du Québec.
 - .2 This list must be authorized in writing by the departmental representative.
- .2 The list of hourly rates of the contractor approved by the departmental representative will be used as a reference for the assessment of costs related to the amendments.
- .3 Any machinery, personnel or equipment not specified on this list will be subject to a written agreement between the Contractor and the departmental representative. These rates will be established in accordance with the items 1.1.1.1.
 - .1 In cases where rates are not indicated in various references, the rates will be negotiated between the departmental representative and the Contractor.

1.2 MEASUREMENT FOR PAYMENT

- .1 Unless otherwise indicated, 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 A breakdown of all lump sum items shall be submitted to Departmental Representative upon Contract award.
- .3 The Measurement method for the categories of labour, tools and materials making part of the Works, will be the following:
 - .1 Part 1 – Lump Sum items:

The following items will be measured in a global manner, and the percentage of progress will be measured jointly by the Contractor and the Departmental Representative. If there is no agreement on the percentage of progress, those measured by the Departmental Representative will take precedence.

 - .1 Item #1: Site Installation
 - .1 Item #1.1 – Site Organization
 - .1 This lump sum item includes all elements of the division 01, along with anything that cannot be assigned to another position of measurement.

- .2 The organization of construction during the work is paid according to the detailed breakdown of the contractor.
 - .2 Item #1.2 – Main Equipment – Mobilization/Demobilization
 - .1 This lump sum item includes all the elements required for the mobilization and demobilization of the contractor, and for the duration of the project.
 - .2 The mobilization and demobilization are paid according to the detailed breakdown of the contractor.
 - .2 Item #2: Structural Elements – Superstructure connecting the existing wharf to the new turning dolphin
 - .1 Item #2.1 – Aluminum walkway 1.2 m x 16 m – Supply
 - .1 This lump sum item includes the supply of the catwalk and the engineering design fees related to the catwalk.
 - .2 Supply of corresponding fastening hardware is included in this item.
 - .3 Supply of anchors, required bearing plates with studs, and all other studding required on the deck elements are included in this item.
 - .2 Item #2.2 – Aluminum walkway 1.2 m x 16m – Installation
 - .1 This lump sum item includes all materials, labour, and equipment required for the installation of the walkway.
 - .2 Installation of anchors, bearing plates with studs, and all other studding required on the deck elements are included in this item.
- .2 Part 2 – Unit Price Items:

All the unit price items will be measured jointly by the Contractor and the Departmental Representative. If there is no agreement on the quantities, those measured by the Departmental Representative will take precedence.

 - .1 Item #1 : Wharf Extension and Reinforcement
 - .1 Item #1.1 – Quay Equipment – Fendering Systems
 - .1 Item #1.1.1 – Dismantling of existing fenders
 - .1 This item is measured per unit of Fendering Systems dismantled and includes all work necessary for the demolition, dismantling, all as described in the plans and specifications. This item also includes evacuation and disposal in authorized sites of all materials that cannot be reintroduced in the structure.
 - .2 This item also includes all the management and disposal fees for materials and fendering systems.
 - .2 Item #1.1.2 – Modification of fenders structural bases
 - .1 This item is measured per unit of fender structural base and includes the bush hammering or reinforced concrete works. Materials and

- equipment for this work are also included in this item.
- .2 Existing concrete surface preparation, concrete demolition, anchors in the existing concrete, formworks, concrete, reinforcing, cast-in-place elements are part of this item.
- .3 The heating of mixing water for concrete is included in this item.
- .4 The measures taken to protect the concrete in cold weather, concrete cooling and protection in hot weather are also included in this item.
- .5 Any specific means due to limited access (underside of existing concrete structures) are part of this item.
- .3 Item #1.1.3 – Fendering systems – Installation
 - .1 This item is measured per unit of fender systems installed.
 - .2 It includes materials, labour and equipment required for the installation of the fendering systems with fastening hardware. Determination of locations of existing rebars using a mapper or any other Non Destructive detection equipment are part of this scope.
 - .3 The drilling and installation of anchors, fastening hardware, steel plates with studs and all studding or accessories required on the concrete structure vertical and horizontal faces are part of this item.
 - .4 The supply of the fenders systems is not included in this item.
- .2 Item #1.2 – Quay Equipment – Mooring Systems
 - .1 Item #1.2.1 - Dismantling of existing bollards
 - .1 This item is measured per unit of Bollards Systems dismantled and includes all work necessary for the demolition, dismantling, all as described in the plans and specifications.
 - .2 This item also includes evacuation and disposal in authorized sites of all materials that cannot be reintroduced in the structure.
 - .3 This item also includes all the management and disposal fees for materials and fendering systems.
 - .2 Item #1.2.2 - Modification of existing bollard structural base
 - .1 This item is measured per unit of Bollard's structural base and includes demolition, bush

- hammering and reinforced concrete works.
Materials and equipment for this work are also included in this item.
- .2 Concrete, reinforcing, cast-in-place elements and other works as described in the plans are part of this item.
- .3 The heating of mixing water for concrete is included in this item.
- .4 The measures taken to protect the concrete in cold weather, concrete cooling and protection in hot weather are also included in this item.
- .3 Item #1.2.3 – New bollard structural bases
 - .1 This item is measured per unit of new structural bases for bollards and include the reinforced concrete work. Materials and equipment for this work are also included in this item.
 - .2 Concrete, reinforcing, anchorages, cast-in-place elements and other works as described in the plans are part of this item.
 - .3 The heating of mixing water for concrete is included in this item.
 - .4 The measures taken to protect the concrete in cold weather, concrete cooling and protection in hot weather are also included in this item.
- .4 Item #1.2.4 – Bollards – Installation
 - .1 This item is measured per unit of bollard. It includes the installation of bollards, including installation of fastening hardware and anchor bolts in the concrete, galvanizing, and painting repairs. This item includes the supply of the grout, as well as the clogging product to apply at the head of the anchor bolts, all, as indicated in the plans and specifications.
 - .2 The supply of the bollards and associated anchor bolts is not included in this item.
- .3 Item #1.3 – Structural Components – Wharf Reinforcement
 - .1 Item #1.3.1 – Piles 508 x 15.87 mm – Supply
 - .1 This item is measured per linear meter of pile based on the lengths measured in place and after cutoff. All losses shall be included in the unit price. The amount of linear meters of pile for purposes of payment is determined together with the departmental representative. The price includes the supply of the piles, the supply of steel rings and stiffeners forming the head of the piles, steel plates forming part of the piles, caps

- and protective shoes used for driving the installation of piles if required...
- .2 The rock quality is variable. The contractor is required to consult the Geotechnical study annexed to the present specification for more details in order to account for this uncertainty in the lengths to be supplied.
 - .3 Based on the dynamic testing, any additional pile length needed to reach the required depths shall be paid per linear meter.
- .2 Item #1.3.2 – Piles 508 x 15.87 mm – Installation
- .1 This item is measured per linear meter of pile based on the lengths measured in place and after cutoff. All losses shall be included in the unit price. The amount of linear meters of pile for purposes of payment is determined together with the departmental representative. The unit price includes but is not limited to the machinery, labour, and equipment required for the installation of the pile according to specified depths as indicated on the drawings, the cutoff, the removal of sediment inside the pile down to the bottom of the pile, the cleaning of the pile, the management and disposal of water cleaning of the piles according to the requirements of the 01 35 44 – Environmental Protection Procedures for Marine Works.
 - .2 The price will include the removal of debris and rocks for the realization of the corridor to pile.
 - .3 The rock quality is variable. The contractor is required to consult the Geotechnical study annexed to the present specification for more details.
 - .4 This item includes costs related to the realization of the circumferential welding of the pile (maximum, one welding by pile, is allowed) if required, and to the welding of the steel rings and stiffeners forming the head of the piles, and it includes laboratory fees for the inspection of the welding (including the production of a certificate of conformity issued by a senior welding engineer (10 years minimum experience)). This control must be carried out by an independent laboratory and cannot be carried out by the contractor's staff. This price also includes the equipment and labour required as support for the laboratory responsible for dynamic testing.

- .5 This Item includes the costs incurred by the Contractor to allow the installation of piles through the 2-4 tons rock berm. It is the contractor's responsibility to adapt its methods to allow the clearing of the seabed and any possible obstacles or any other method deemed effective for the realization of the work.
- .6 This price also includes equipment (such as crane, hammer, work platforms etc.) and labor required as support for the laboratory responsible for dynamic testing.
- .7 Based on the dynamic testing, any additional pile length supplied to reach the required depths shall be paid per linear meter.
- .8 This item also includes the dismantling, relocation, and reinstallation of existing elements and services (bunkering ducts, ducts, lighting, electricity, etc.) located on the dock and which may be an obstacle during the installation of the piles.
- .9 This item also includes the costs associated with the camera inspection of the interior of the piles. Inspection to reach the bottom of the pile and to be completed following the cleaning of the pile.
- .3 Item #1.3.3 – Concrete in piles – Supply and Installation
 - .1 The concrete needed to fill the piles on their whole length is measured per cubic meter, according to the dimensions indicated in the plans. The concrete is measured per cubic meters, according to the dimensions indicated in the drawings. It includes the batching, transport to the worksite, placing and vibration of concrete mixed in accordance with drawings and Specs requirements. It also includes the formwork and falsework (if applicable).
 - .2 All concrete constituents are included in this item.
 - .3 The supply and installation of reinforcing steel anchors for connection to the concrete according to the drawings are included in this item.
 - .4 The heating of mixing water for concrete is included in this item.
 - .5 This item also includes evacuation and disposal in authorized sites of non-compliant concrete supplied to the worksite.
 - .6 This item also includes concrete quality testing.

- .4 Item #1.3.4 – Reinforced concrete – Supply and installation
 - .1 The concrete is measured per cubic meters, according to the dimensions indicated in the plans. It includes the batching, transport to the worksite, placing and vibration of concrete mixed in accordance with drawings and Specs requirements. It also includes the formwork and falsework, sealing and joints.
 - .2 No deduction of the amount of concrete will be made for reinforcing steel and less than 0.1 m² openings square surface.
 - .3 All concrete constituents are included in this item.
 - .4 Supply and installation of steel reinforcement, anchors, and all inserts in concrete are included in this item.
 - .5 The heating of mixing water for concrete is included in this item.
 - .6 All the elements of concrete, concrete bases, walkway supports, and others, or those which make part of the Wharf Reinforcement are included in this item.
 - .7 The measures taken to protect the concrete in cold weather, concrete cooling and protection in hot weather are also included in this item.
 - .8 This item also includes the salvage, relocation, and supply of non-retrievable parts of the existing ladders according to the contract drawings.
 - .9 This item also includes evacuation and disposal in authorized sites of non-compliant concrete supplied to the worksite.
 - .10 This item also includes concrete quality testing.
- .5 Item #1.3.5 – Pile Jackets – Supply and Installation
 - .1 This item is measured per unit of pile jacket installed. The unit price includes but is not limited to, the supply of jackets, the installation of the jackets according to specified depths to the drawings, the supports, the cutoff, the sealing elements located at the end of the jackets, the plates, the stiffeners, the cleaning, the grout, the paint, the management and disposal of water cleaning of the piles according to the requirements of the 01 35 44 – Environmental Protection Procedures for Marine Works.

- .2 Following elevations, if required, divers and their equipment are part of this item.
 - .3 Welds, surface preparation for welds (on liners and on piles), cushions and other required equipment are part of this item.
 - .4 The cleaning, surface preparation for painting, painting and other required equipment is part of this article.
 - .5 The grout filler in the pile jackets is part of this item. This item also includes the temporary supports for the installation of the liners and the placement of the filling grout.
- .2 Item #2 – Structural Components – Turning Dolphin
- .1 Item #2.1 – Quay Equipment
 - .1 Item #2.1.1 – Fendering Systems – Installation
 - .1 This item is measured per unit of fender systems installed.
 - .2 It includes materials, labour and equipment required for the installation of the fendering systems with fastening hardware.
 - .3 The installation of anchors and steel plates with studs and all studding required on the wall in place elements are part of this item.
 - .4 The supply of the fenders systems is not included in this item.
 - .2 Item #2.1.2 – Bollards 60T – Installation
 - .1 This item is measured at unit of bollard. It includes the installation of bollards, including that of the hardware and anchor bolts in the concrete, galvanizing, and painting repairs. This item includes the supply of the grout, as well as clogging product to put in place at the head of the anchor bolts, all, as indicated in the plans and specifications.
 - .2 The supply of the bollard and associated anchor bolts is not included in this item.
 - .3 Item #2.1.3 – Guardrail – Supply and Installation
 - .1 This item is measured per meter of installed galvanized guardrail. It includes the supply and installation, including the hardware and anchor to the concrete, galvanizing and painting. This item includes the supply of the grout, as well as clogging product to put in place at the head of the anchor bolts, all, as indicated in the plans and specifications.
 - .2 Item #2.2 – Structural Components – Turning Dolphin

- .1 Item #2.2.1 – Piles 610 x 19.0 mm – Supply
 - .1 This item is measured per linear meter of pile based on the lengths measured in place and after cutoff. All losses shall be included in the unit price. The amount of linear meters of pile for purposes of payment is determined together with the departmental representative. The price includes the supply of the piles, the supply of steel rings and stiffeners forming the head of the piles, steel plates forming part of the piles, caps and protective shoes used for driving the installation of piles if required...
 - .2 The rock quality is variable. The contractor is required to consult the Geotechnical study annexed to the present specification for more details in order to account for such uncertainties regarding the length of piles to be supplied.
 - .3 Based on the dynamic testing, any additional pile length supplied to reach the required depths shall be paid per linear meter.
- .2 Item #2.2.2 – Piles 610 x 19.0 mm – Installation
 - .1 This item is measured per linear meter of pile based on the lengths measured in place and after cutoff. All losses shall be included in the unit price. The amount of linear meters of pile for purposes of payment is determined together with the departmental representative. The unit price includes but is not limited to the machinery, labour, and equipment required for the installation of the pile according to specified depths as indicated on the drawings, the cutoff, the removal of sediment inside the pile down to the bottom of the pile, the cleaning of the pile, the management and disposal of water cleaning of the piles according to the requirements of the 01 35 44 – Environmental Protection Procedures for Marine Works.
 - .2 The price will include the removal of debris and rocks for the pile driving operations.
 - .3 The rock quality is variable. The contractor is required to consult the Geotechnical study annexed to the present specification for more details.
 - .4 This item includes costs related to the realization of the circumferential welding of the pile (maximum, one welding by pile, is allowed) if required, and it includes laboratory fees for the inspection of the welding (including the

- production of a certificate of conformity issued by a senior welding engineer (10 years minimum experience)). This control must be carried out by an independent laboratory and cannot be carried out by the contractor's staff. This price also includes the equipment and labour required as support for the laboratory responsible for dynamic testing.
- .5 The price will include the removal of debris and rocks for the realization of the corridor to pile.
- .6 This price also includes equipment (such as crane, hammer, work platforms etc.) and labor required as support for the laboratory responsible for dynamic testing.
- .7 Based on the dynamic testing, any additional pile length supplied to reach the required depths shall be paid per linear meter.
- .8 The welds, cushions and other required equipment are part of this item.
- .3 Item #2.2.3 – Concrete in piles – Supply and Installation
- .1 The concrete needed to fill the piles on their whole length is measured per cubic meter, according to the dimensions indicated in the plans. The concrete is measured per cubic meters, according to the dimensions indicated in the plans. It includes the batching, transport to the worksite, placing and vibration of concrete mixed in accordance with drawings and Specs requirements. It also includes the formwork and falsework (if applicable).
- .2 All concrete constituents are included in this item.
- .3 The supply and installation of reinforcing steel, steel anchors for the connection to the capping concrete elements according to the drawings are included in this item.
- .4 The heating of mixing water for concrete is included in this item.
- .5 This item also includes evacuation and disposal in authorized sites of non-compliant concrete supplied to the worksite.
- .6 This item also includes concrete quality testing.
- .4 Item #2.2.4 – Reinforced concrete – Supply and installation
- .1 The concrete is measured per cubic meters, according to the dimensions indicated in the

- plans. It includes the batching, transport to the worksite, placing and vibration of concrete mixed in accordance with drawings and Specs requirements. It also includes the formwork and falsework, sealing and joints.
- .2 No deduction of the amount of concrete will be made for reinforcing steel and less than 0.1 m² openings square surface.
 - .3 All concrete constituents are included in this item.
 - .4 Supply and installation of steel reinforcement, anchors, and all inserts in concrete are included in this item.
 - .5 The heating of mixing water for concrete is included in this item.
 - .6 All the elements of concrete, concrete bases, walkway supports, and others, or those which make part of the turning dolphin are included in this item.
 - .7 The measures taken to protect the concrete in cold weather, concrete cooling and protection in hot weather are also included in this item.
 - .8 This item also includes the supply and installation of ladders according to drawings directives.
 - .9 This item also includes evacuation and disposal in authorized sites of non-compliant concrete supplied to the worksite.
 - .10 This item also includes concrete quality testing.
- .5 Item #2.2.5 – Pile Jackets 864 mm – Supply and Installation
- .1 This item is measured per unit of pile jacket installed. The unit price includes but is not limited to, the supply of jackets, the installation of the jackets according to specified depths to the plans, the supports, the cutoff, the sealing elements located at the end of the jackets, the plates, the stiffeners, the cleaning, the grout, the paint, the management and disposal of water cleaning of the piles according to the requirements of the 01 35 44 – Environmental Protection Procedures for Marine Works, and all the other related works and requirements adjustments.
 - .2 Following elevations, if required, divers and their equipment are part of this item.

- .3 The welds, cushions and other required equipment are part of this item.
- .4 The cleaning, surface preparation for painting, painting and other required equipment is part of this article.
- .5 The filling grout in piles jackets are part of this item.
- .6 Item #2.2.6 – Cathodic Protection
 - .1 This item is measured per unit of anode and includes the supply and installation of all the required elements for cathodic protection as indicated in the drawings.
 - .2 Required supports, hardware, welding are part of this item.
- .3 Item #3 : Piles Splicing
 - .1 Item #3.1 – Splicing of 610 x19mm piles
 - .1 This item includes the costs related to the realization of the circumferential weld of the pile (maximum, one weld per pile, is allowed), if required. It includes the laboratory costs for the inspection of the weld (including the production of a certificate of conformity issued by a senior welding engineer with minimum 10 years of experience). This check must be carried out by an independent laboratory and cannot be carried out by the contractor's staff.
 - .2 This item is applicable in the case of an extension of 610 x 19.00 mm piles resulting in an additional length of the pile following the dynamic tests.
 - .3 If, following the dynamic tests, the sheets of the piles in the ground are of identical lengths or less than those on the plans, then this item will not be applicable.
 - .2 Item #3.2 – Splicing of 508 x15.85mm piles
 - .1 This item includes the costs related to the realization of the circumferential weld of the pile (maximum, one weld per pile, is allowed), if required. It includes the laboratory costs for the inspection of the weld (including the production of " a certificate of conformity issued by a senior welding engineer with minimum 10 years of experience). This check must be carried out by an independent laboratory and cannot be carried out by the contractor's staff.
 - .2 This item is applicable in the case of an extension of 508 x 15.85 mm piles resulting in an additional length of the pile following the dynamic tests.

- .3 If, following the dynamic tests, the sheets of the piles in the ground are of identical lengths or less than those on the plans, then this item will not be applicable.

1.3 SCHEDULE OF VALUES

- .1 Provide schedule of values supported by evidence as Departmental Representative may reasonably direct and when accepted by Departmental Representative, be used as basis for applications for payment.
- .2 Include statement based on schedule of values with each application for payment.
- .3 Support claims for products delivered to Place of Work but not yet incorporated into Work by such evidence as Departmental Representative may reasonably require establishing value and delivery of products.

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 Particular requirements for inspection and testing to be carried out by testing laboratory designated by Departmental Representative are specified under various sections.

1.2 APPOINTMENT AND PAYMENT

- .1 Departmental Representative will appoint and pay for services of testing laboratory as part of their own Quality Assurance program. However, the Contractor is responsible for the payment and coordination of all Quality Control Testing, including:
 - .1 All field quality control testing and inspection items relating to the Contractor's work, the Contractor representative will be in charge of Quality Control and all testing deemed necessary by the Departmental Representative. This includes, but is not limited to concrete testing, steel and aluminum weld inspections and testing. All results must be forwarded to the Departmental Representative for review.
 - .2 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.
 - .3 Inspection and testing performed exclusively for Contractor's convenience.
 - .4 Mill tests and certificates of compliance.
 - .5 Tests specified to be carried out by Contractor under the supervision of the Departmental Representative.
- .2 Where tests or inspections by designated testing laboratory reveal work not in accordance with contract requirements. Pay costs for additional tests or inspections as Departmental Representative may require to verify acceptability of corrected work.

1.3 CONTRACTOR'S RESPONSIBILITIES

- .1 Furnish labour and facilities to:
 - .1 Provide access to work to be inspected and tested.
 - .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 handle test samples.
 - .5 Provide equipment, support, and piles preparation for the dynamic tests. Contractor to conform to laboratory requirements.
- .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

Part 3 EXECUTION

3.1 NOT USED

END OF SECTION

1.1 GENERAL

- .1 As soon as possible and in a predetermined order in order not to delay the execution of the work, submit the documents and samples required to the Departmental Representative for review. A delay in this regard shall not constitute a reason for obtaining an extension of the period of execution of the works and no request in this direction will be accepted.
- .2 Submit to Departmental Representative, for review, shop drawings, product data, samples and other information specified.
- .3 Do not undertake work for which documents and samples submission is required before the review of all the submittals is completely completed.
- .4 The characteristics indicated on the shop drawings, the technical data sheets and the samples of products and works must be expressed in metric units (SI).
- .5 Review documents and samples before submitting them to Departmental Representative. By this prior verification, the Contractor confirms that the requirements applicable to the work have been or will be determined and verified, and that each of the documents and samples submitted has been examined and found to comply with the requirements of the work and the Contractual Documents. Documents and samples which are not stamped, signed, dated and identified in connection with the particular project will be returned without being examined and will be considered rejected.
- .6 Notify the Departmental Representative in writing, when submitting documents and samples, of any deviations from the requirements of the Contractual Documents, and explain the reasons.
- .7 Ensure the accuracy of measurements taken on site in relation to adjacent structures affected by the work.
- .8 The fact that the documents and samples submitted are examined by the Departmental Representative in no way releases the Contractor from his responsibility to transmit complete and accurate documents.
- .9 The fact that the documents and samples submitted are examined by the Departmental Representative in no way relieves the Contractor from his responsibility to send documents in accordance with the requirements of the Contractual Documents.
- .10 Keep on site a reviewed copy of each document submitted.

1.2 SHOP DRAWINGS AND TECHNICAL DATA

- .1 The expression "shop drawings" means the drawings, diagrams, illustrations, tables, rates or performance graphs, brochures and other documentation that the Contractor must provide to show in detail a part of the work concerned.
- .2 Shop drawings to be prepared by contractor, subcontractor, supplier or distributor, which illustrate appropriate portion of work, showing fabrication, layout, setting or erection details as specified in appropriate sections.
- .3 Shop drawings must indicate the materials to be used as well as the methods of construction, fastening or anchoring to be employed, and they must contain the assembly diagrams, the details of the connections, the relevant explanatory notes and any other necessary information during the execution of the works. When works or elements are

connected or connected to other works or to other elements, indicate on the drawings that there has been coordination of the requirements, regardless of the section under which the works or adjacent elements will be supplied and installed. Make references to specifications and drawings.

- .4 Identify details by reference to sheet and detail numbers shown on Contract Drawings.
- .5 Maximum sheet size 860mm X 1120 mm.
- .6 .6 All shop drawings which complete the design indicated in the plans and specifications provided by the Departmental Representative or provide them with additional information must be signed and sealed by a professional engineer registered in the province of Quebec.
- .7 Any other shop drawing, when required by the Departmental Representative, must be stamped by a professional engineer registered in the province of Quebec.
- .8 Allow Ten (10) working days to examine each batch of documents submitted to the Departmental Representative.
- .9 Changes made to shop drawings by Departmental Representative are not intended to change Contract Price. If so, however, notify the Departmental Representative in writing before starting the work.
- .10 Make changes to shop drawings requested by the Departmental Representative in accordance with the requirements of the Contract Documents. When resubmitting the drawings, notify the Departmental Representative in writing of any changes that have been made in addition to those required.
- .11 Submit one (1) electronic copy of shop drawings prescribed in specification Sections and as reasonably required by Departmental Representative.
- .12 If no shop drawing is required due to the use of a standard manufacturing product, submit one (1) electronic copy of the technical data sheets or manufacturer's documentation prescribed in the technical sections of the specification and required by the Departmental Representative.
- .13 Submit an electronic copy of the test reports prescribed in the technical sections of the specifications and requested by the Departmental Representative.
 - .1 The report signed by the official representative of the testing laboratory must certify that materials, products or systems identical to those proposed for the work have been tested in accordance with the prescribed requirements.
 - .2 The tests must have been carried out within three (3) years preceding the date of contract award.
 - .3 The report signed by the official representative of the testing laboratory must certify that materials, products or systems identical to those proposed for the work have been tested in accordance with the prescribed requirements.
- .14 Submit an electronic copy of the certificates prescribed in the technical sections of the specifications and required by the Departmental Representative.
 - .1 The documents, printed on official correspondence paper of the manufacturer and signed by a representative of the latter, must certify that the products, materials,

- equipment and systems supplied comply with the prescriptions of the specifications.
- .2 Certificates must bear a date after contract award and indicate the name of the project.
- .15 Submit an electronic copy of manufacturer's instructions prescribed in specification Sections and requested by Departmental Representative.
 - .1 Pre-printed documents describing the method of installation of the products, materials and systems, including specific instructions and data sheets indicating the impedances, the risks as well as the safety measures to be implemented.
- .16 Submit an electronic copy of the reports of the inspections carried out on site by the manufacturer, prescribed in the technical sections of the specifications and required by the Departmental Representative.
 - .1 Reports of tests and verifications carried out by the manufacturer's representative in order to confirm the conformity of the products, materials, equipment or systems installed with the manufacturer's instructions.
- .17 In addition to current information, provide any additional details that apply to the work.

1.3 PRODUCT DATA

- .1 Certain specification sections specify that manufacturer's standard schematic drawings, catalogue sheets, diagrams schedules, performance chart, illustrations and other standard descriptive data will be accepted in lieu of shop drawings.

1.4 SAMPLES

- .1 Submit product samples for review, according to specifications in technical sections. Label samples indicating their origin and intended destination.
- .2 Submit samples in sizes and quantities specified.
- .3 Samples to be sent to the Departmental Representative's site office must be Post Paid.
- .4 Notify the Departmental Representative in writing, at the time of the presentation of the product samples, of the deviations they present from the requirements of the Contractual Documents.
- .5 Construct site samples and mock-ups at locations acceptable to Departmental Representative.
- .6 The samples reviewed and approved will become the reference standard from which the quality of materials and the quality of workmanship of finished and installed works will be evaluated.

1.5 WORK SAMPLES

- .1 Make the samples of the work required in accordance with section 01 45 00 - Quality control.

1.6 DOCUMENTATION PHOTOGRAPHIQUE

- .1 Submit, as directed by the Departmental Representative, one (1) copy of the file of digital color photographs, standard resolution, in jpg format, presented in electronic format.
- .2 Project identification: name and number of the project and date the photo was taken.
- .3 Number of viewpoints: two (2).
 - .1 The views and their location will be determined by the Departmental Representative.
 - .2 Photo submission frequency: as directed by Departmental Representative.

1.7 MISCELLANEOUS DATA

- .1 Provide certificates, methodologies, design and test results as required.

1.8 COORDINATION OF SUBMISSIONS

- .1 Review shop drawings, data sheets, product data, samples and miscellaneous data prior to submissions.
- .2 Verify:
 - .1 Field Measurements.
 - .2 Field Construction Criteria.
 - .3 Catalogue numbers and similar data.
- .3 Coordinate each submission with requirements of work and contract documents. Individual submissions will not be reviewed until all related information is available.
- .4 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submissions.
- .5 Contractor's responsibility for deviations in submission from requirements in Contract documents is not relieved by Departmental Representative's review of submission, unless Departmental Representative gives written acceptance of specified deviations.
- .6 Notify Departmental Representative, in writing at time of submission, of deviations from requirements of contract documents stating reasons for deviations.
- .7 After Departmental Representative's review, distribute copies.

1.9 SUBMISSION REQUIREMENTS

- .1 Schedule submissions at least Fourteen (14) days before dates reviewed submissions will be needed.
- .2 Provide one (1) electronic file in PDF file format for all submittals. Provide also the drawings in DWG format where requested by the Departmental Representative.
- .3 Accompany submissions with transmittal letter, in duplicate, containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.

- .4 Identification and quantity of each shop drawing, product data and sample submitted.
- .5 Other pertinent data.
- .4 Submissions to include:
 - .1 Preparation date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 Separate details when pertinent.
 - .4 The Contractor's stamp, signed by the latter's authorized representative, certifying that the documents submitted are approved, that the measures taken on site have been verified and that the assembly conforms to the requirements of the Contractual Documents;
 - .5 The relevant details concerning the portions of the work concerned:
 - .1 Materials and manufacturing details;
 - .2 Layout or configuration, with dimensions, including those taken on site, as well as clearances;
 - .3 Details of assembly or adjustment;
 - .4 Characteristics such as power, flow or capacity;
 - .5 Performance characteristics;
 - .6 Reference standards;
 - .7 Wiring diagrams;
 - .8 Single line diagrams and schematic diagrams;
 - .9 Connection / relation with adjacent works and structures.
 - .6 Identification of product or material.
 - .7 Relation to adjacent structure or materials.
 - .8 Field dimensions, clearly identified as such.
 - .9 Specification Section Number.
 - .10 Applicable standards such as CSA or CGSB numbers.
 - .11 Contractor's stamp, initialed or signed, certifying review of submission, verification of field measurements and compliance with contract documents.
- .5 Distribute copies of shop drawings and data sheets after Departmental Representative has completed their review.

1.10 SHOP DRAWINGS REVIEW

- .1 The review of shop drawings by Public Service and Procurement Canada or its authorized Departmental Representative, is for the sole purpose of ascertaining conformance with the general concept. This review shall not mean that the Departmental Representative approves the detail design inherent in the shop drawings, responsibility for which shall

remain with the Contractor submitting same, and such review shall not relieve the Contractor of responsibility for errors or omissions in the shop drawings or of responsibility for meeting all requirements of the construction and contract documents. Without restricting the generality of the foregoing, the Contractor is responsible for accuracy of dimensions to be confirmed and correlated at the job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of the work of all sub-trades.

1.11 OTHER REVIEWS

- .1 As for shop drawings above, other reviews are for the sole purpose of ascertaining the general concept.

END OF SECTION

Part 1 GENERAL

1.1 WORK INCLUDED

- .1 Fire Safety Requirements
- .2 Hot Work Permit
- .3 Existing Fire Protection and Alarm Systems

1.2 RELATED WORK

- .1 Section 01 35 29.06: Health and Safety.

1.3 REFERENCES

- .1 FCC No. 301-June 1982 Standard for Construction Operations.
- .2 FCC No. 302-June 1982 Standard for Welding and Cutting.

1.4 DEFINITIONS

- .1 Hot Work defined as:
 - .1 Welding work
 - .2 Cutting of materials by use of torch or other open flame devices
 - .3 Grinding with equipment which produces sparks.

1.5 SUBMITTALS

- .1 Submit a copy of Hot Work Procedures, to Departmental Representative for review, within 14 calendar days after the Notice of Bid Acceptance.
- .2 Include sample of Hot Work Permit.
- .3 Submit above documents in accordance with the submittal general requirements specified in Section 01 33 00.

1.6 FIRE SAFETY & HOT WORK REQUIREMENT

- .1 Implement and follow fire safety measures during Work. Comply with following:
 - .1 National Fire Code, 2015.
 - .2 Fire Protection Standards FCC 301, Standard for Construction Operations and FCC 302, Standard for Welding and Cutting as issued by the Fire Protection Services of Human Resources Development Canada
 - .3 Federal and Provincial Occupational Health and Safety Acts and Regulations as specified in Section 01 35 29.06 – Health and Safety.
- .2 In event of conflict between any provisions of above authorities the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, Departmental Representative will advise on the course of action to be followed.
- .3 Hot Work Requirements:

- .1 Obtain Departmental Representative's written Authorization to Proceed for the performance of Hot Work on site as may be required in the course of Work.
- .2 To obtain authorization submit to Departmental Representative for review:
 - .1 Contractor's Hot Work Procedures to be followed on site in accordance with clause 1.8 below.
 - .2 Type of work and frequency of situations which will require Hot Work.
 - .3 Upon confirmation that effective fire safety measures will be implemented for hot work, Departmental Representative will grant Authorization to Proceed.
 - .4 In most cases, Departmental Representative will issue only one written authorization covering the entire construction project and duration of work. However, in some cases, depending on the nature or phasing of work, the quantity of various trades needing to perform welding and cutting on site, or other deemed situation, Departmental Representative might designate certain portions of the work as separate entities, each entity requiring individual written authorization to proceed. Follow Departmental Representative's directives in this regard.
- .4 Do not perform any Hot Work until receipt of Departmental Representative's written Authorization to Proceed.

1.7 CONFORMANCE

- .1 Stringently follow Hot Work Procedures, as established for project and agreed upon with Departmental Representative. Enforce use and compliance by all workers.
- .2 Brief all workers and subcontractors on Hot Work Procedures and Permit system.
- .3 Failure to comply with the established hot work procedures may result in the issuance of a Noncompliance Notification at Departmental Representative's discretion with possible disciplinary measures imposed as specified in Section 01 35 29.06 - Health and Safety.

1.8 HOT WORK PROCEDURES

- .1 Develop Hot Work Procedures, to be followed when Hot Work is required as part of the work.
- .2 Describe safe work practices and sequence of activities to be followed on site by Contractor and workers to minimize the potential occurrence of a fire resulting from Hot Work.
- .3 Hot Work Procedures to include:
 - .1 Requirement to perform hazard assessment of the site or immediate work area, based on type and extent of Hot Work required, in accordance with Hazard Assessment and Safety Plan requirements of Section 01 35 29.06 – Health and Safety. Carry out hazard assessment for each hot work event.
 - .2 Use of a Hot Work Permit system, issued by an authorized person in Contractor's employ, for each event when Hot Work is required, granting permission to carry out hot work.
 - .3 Provision of a designated person (s) to carryout a Fire Safety Watch for a minimum of 30 minutes immediately upon completion of the hot work.

- .4 Procedures to comply with fire safety codes and standards specified herein and specified in Section 01 35 29.06 – Health and Safety.
- .5 Generic procedures, if used, must be edited, supplemented with pertinent information and tailored to reflect specific project conditions. Clearly label as being the Hot Work Procedures applicable to this contract.
- .6 Include within procedures the step by step process on how to prepare and issue the Hot Work Permit.
- .7 Hot Work Procedures to be in typewritten format, listing step by step procedures and worker instructions, clearly establishing and allocating responsibilities of:
 - .1 Worker (s)
 - .2 Designated person authorized to issue the Hot Work Permit,
 - .3 Fire Safety Watcher,
 - .4 Subcontractors and Contractor.

1.9 HOT WORK PERMIT

- .1 Fill out the "Hot Work Permit" form in typewritten format.
- .2 Hot Work Permit form to include, as a minimum, the following data:
 - .1 Project name and project number.
 - .2 Building name/site name, address and specific floor, room or area where hot work will be performed.
 - .3 Date when permit issued.
 - .4 Description on type of hot work to be carried out.
 - .5 Special precautions required, including type of fire extinguisher needed.
 - .6 Name and signature of authorized person, designated by Contractor, to issue the permit
 - .7 Name of worker (s) (clearly printed) to which the permit is being issued.
 - .8 Time duration of permit (not to exceed 8 hours) indicating "Start" time & date and "Completion" time & date when Hot Work permit will be in effect.
 - .9 Worker signature with date and time when hot work terminated.
 - .10 Specified period of time requiring Safety Watch.
 - .11 Name and signature of person designated Fire Safety Watcher, complete with time & date when safety watch terminated, certifying that the surrounding area was under his continual watch and inspection for the minimum time period specified in Permit and commenced immediately upon the completion of Hot Work.
- .3 Only use Industry Standard forms if all data specified above is included on form.
- .4 Each Hot Work Permit to be completed in full and signed as follows:
 - .1 Authorized person issuing Permit before hot work commences.
 - .2 Worker(s) upon completion of Hot Work.
 - .3 Fire Safety Watcher upon termination of safety watch.
 - .4 Returned to Contractor's Site Superintendent for safe keeping.

1.10 DOCUMENTS ON SITE

- .1 Keep Hot Work Permits and Hazard assessment documentation on site for duration of Work.
- .2 Upon request, make available to Departmental Representative or to authorized safety representative for inspection.

END OF SECTION

Part 1 General

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

1.1 RELATED REQUIREMENTS

- .1 Section 01 14 00 – work restrictions
- .2 Section 01 35 24 – fire safety requirements
- .3 Section 01 35 44 – environmental protection procedures for marine

1.2 REFERENCES

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

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

The investigation report shall contain at least the following:

1. date, time and place of accident;
 2. name of sub-contractor involved in the accident;
 3. number of persons involved and condition of wounded;
 4. witness identification;
 5. detailed description of tasks performed at the time of the accident;
 6. equipment being used to accomplish the tasks performed at the time of the accident;
 7. corrective measures taken immediately after the accident;
 8. causes of the accident;
 9. preventive measures that have been put in place to prevent a similar accident.
- .8 Submit to Departmental representative WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittals. Contractor must also keep one copy of these documents on the construction site.
- .9 Medical Surveillance: where prescribed by legislation, regulation or prevention program, submit certification of medical surveillance for construction site personnel prior to commencement of Work, and submit additional certifications for any new construction site personnel to Departmental representative.
- .10 Submit to Departmental representative an on-site Emergency Response Plan at the same time as the prevention program. The Emergency Response plan must contain the elements listed in the article "GENERAL REQUIREMENTS" of this section.
- .11 Submit to Departmental representative copies of all training certificates required for the application of the prevention program, in particular (if applicable) for the following:
- .1 first aid in the workplace and cardiopulmonary resuscitation;
 - .2 work likely to release asbestos dust (mandatory for all work where asbestos is present);
 - .3 work in confined spaces (mandatory for all work in confined spaces);
 - .4 lockout-tagout procedures (mandatory for all work requiring lockout);
 - .5 safely operating forklift trucks (mandatory for all forklift usage);
 - .6 safely operating elevating work platforms (mandatory for the use of all elevating platforms);
 - .7 any other requirement of Regulations or the safety program.
- In addition, the certifications of the *Cours de santé et sécurité générale pour les chantiers de construction* (General Health and Safety Training for Construction Sites) shall be available on demand on the construction site.
- .12 Engineer's plans and certificates of compliance: Contractor must submit to the Departmental representative and to the *Commission des normes, de l'équité, de la santé et de la sécurité du travail* (CNESST) a copy signed and sealed by engineer of all plans and certificates of compliance required pursuant to the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the construction industry) or by any other legislation or regulation or by any other clause in the specifications or in the contract. The Contractor must also submit a certificate of conformity signed by an engineer once the

facility for which these plans were prepared has been completed and before a person uses the facility. A copy of these documents must be available on site at all times.

1.4 FILING OF NOTICE OF CONSTRUCTION SITE OPENING

- .1 Notice of construction site opening shall be submitted to the CNESST before work begins. A copy of such notice and acknowledgment of receipt from the CNESST shall be submitted to Departmental representative.

At the completion of all the work, a notice of construction site closing shall be submitted to the CNESST, with a copy to Departmental representative.

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

1.5 HAZARD ASSESSMENT

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

1.6 MEETINGS

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

1.7 REGULATORY REQUIREMENTS

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

1.8 COMPLIANCE REQUIREMENTS

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

1.9 RESPONSIBILITIES

- .1 The Contractor must acknowledge and assume all the tasks and obligations which customarily devolve upon a principal Contractor under the terms of the *Loi sur la santé et la sécurité du travail* (L.R.Q., ch. S-2.1) (Act Respecting Occupational Health and Safety) and the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the construction industry).
- .2 The Contractor must be responsible for health and safety of persons on construction site, safety of property on construction site and for the protection of persons adjacent to construction site and the environment to the extent that they may be affected by conduct of the work.
- .3 No matter the size or location of the construction site, the Contractor must clearly define the limits of the construction site by physical means and respect all specific regulation requirements applicable in this regard. The means chosen to define the limits of the construction site must be submitted to the Departmental representative.
- .4 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific prevention Plan.

1.10 WORK PERFORMED BY EXTERNAL CONTRACTORS

- .1 On this construction site, it is anticipated that work will be performed by an external contractor that has not been hired by the Contractor:
- .2 The Contractor must take the necessary steps to protect the health and safety of external contractors that have no contractual link with the Contractor but have been mandated by the Departmental representative to perform certain work. In return, these external contractors are obligated to submit to the authority of the Contractor (Principal Contractor). A subordination agreement must be signed by the Contractor and by each external contractor to this effect and submitted to the Departmental representative prior to the start of the work of each contractor (see the wording in the article HEALTH AND SAFETY SUBORDINATION AGREEMENT)

1.11 GENERAL REQUIREMENTS

- .1 Before undertaking the work, prepare a site-specific prevention program based on the hazards identified according to the article "HAZARD ASSESSMENT" and the article "RISKS INHERENT TO THE WORKSITE" in this section. Apply this program in its totality from the start of the project until demobilization of all personnel from the construction site. The prevention program shall take into consideration the specific characteristics of the project and cover all the work to be executed on the construction site.

The safety program must include at least the following:

- .1 company safety and health policy;
- .2 description of the stages of the work;
- .3 total costs, schedule and projected workforce curves;
- .4 flow chart of safety and health responsibilities;
- .5 physical and material layout of the construction site;
- .6 risk assessment for each stage of the work, including preventive measures and the procedures for applying them;
- .7 identification of the preventive measures relative to the specific risks inherent to the worksite indicated in the article "RISKS INHERENT TO THE WORKSITE";
- .8 identification of preventive measures for health and safety of employees and / or public works site as indicated in the article "SPECIFIC REQUIREMENTS FOR THE HEALTH AND SAFETY OF OCCUPANTS AND PUBLIC";
- .9 training requirements;
- .10 procedures in case of accident/injury;
- .11 written commitment from all parties to comply with the safety program;
- .12 construction site inspection checklist based on the preventive measures;
- .13 emergency response plan which shall contain at least the following:
 - .1 construction site evacuation procedures;
 - .2 identification of resources (police, firefighters, ambulance services, etc.);
 - .3 identification of persons in charge of the construction site;
 - .4 identification of the first-aid attendants;
 - .5 communication organizational chart (including the person responsible for the site and the Departmental representative);
 - .6 training required for those responsible for applying the plan;
 - .7 any other information needed, in the light of the construction site's characteristics.

If available the Departmental representative will provide the evacuation procedures to the Contractor who shall then coordinate the construction site procedure with that of the site and submit it to the Departmental representative.

- .2 Departmental representative may respond in writing, where deficiencies or concerns are noted in the prevention program and may request resubmission with correction of deficiencies or concerns.
- .3 In addition to the prevention program, during the course of the work the Contractor shall elaborate and submit to the Departmental representative specific written procedures for any work having a high risk factor of accident (for example: demolition procedures, specific installation procedures, hoisting plan, procedures for entering a confined space, procedures for interrupting electric power, etc.) or at the request of the Departmental representative.
- .4 The Contractor shall plan and organize work so as to eliminate the danger at source or ensure collective protection, thereby minimizing the use of personal protective equipment.

- .5 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.
- .6 All mechanical equipment (for example, but not limited to: hoisting devices for persons or materials, excavators, concrete pumps, concrete saws) shall be inspected before delivery to the construction site. Before using any mechanical equipment, the Contractor shall obtain a certificate of compliance signed by a qualified mechanic dated less than a week prior to the arrival of each piece of equipment on the construction site; the certificate shall remain on the construction site and transmitted to the Departmental representative on demand.
- .7 Ensure all inspections (daily, periodic, annual, etc.) for the hoisting devices for persons or materials required by the current standards are carried out and be able to provide a copy of the inspection certificates to the Departmental representative on demand.
- .8 The Departmental representative can at all times, if he suspects a malfunction or the risk of an accident, order the immediate stop of any piece of equipment and require an inspection by a specialist of his choice.
- .9 The Departmental representative must be consulted for the location of storing gas cylinders and tanks on the construction site.

1.12 RISKS INHERENT TO THE WORKSITE

- .1 In addition to the risks related to the tasks to be carried out, personnel responsible for the execution of the work on the construction site will be exposed to the following risks, inherent to the area where the work will be executed.

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

- .1 materials containing asbestos;
- .2 materials containing lead;
- .3 moulds;
- .4 confined spaces;
- .5 overhead power lines;
- .6 underground services (electric, gas, vapour, water system, etc.);
- .7 laboratories;
- .8 trees and landscaping to preserve and protect;
- .9 potentially unstable ground;
- .10 barbed wire fences;
- .11 body of water close by;

The Contractor shall process to a risk assessment of the site to validate this information and see if other risks are present on the site. He must include in its prevention program all risks that have been identified.

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

- .1 The worksite is occupied by employees and/or the public during the following times: once a day for two hours, although these persons will not have access to the Contractor Worksite. The Contractor shall leave a safe access to employees and / or the public during the boarding/unboarding operations.
- .2 These requirements must be included in the Contractor's site-specific safety plan as well as any other measures provided by the Contractor to protect the health and safety of employees and / or the public on the site.

1.14 UNFORESEEN HAZARDS

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

1.15 PERSON IN CHARGE OF HEALTH AND SAFETY

- .1 If the construction site meets the requirements of article 2.5.3 of the *Code de la sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the construction industry), the Contractor needs to hire a competent person authorized as a safety officer and appoint this person full time from the beginning of the work. This person's tasks shall solely be dedicated to the management of health and safety on the construction site. This safety officer must have the following qualifications:
 - .1 have a safety officer certificate issued by the CNESST;
 - .2 have site-related working experience of at least 15 years specific to the activities associated with the present project;
 - .3 have working knowledge of occupational health and safety regulations in the workplace;
 - .4 be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter the construction site to perform work;
 - .5 be responsible for implementing, enforcing in detail and monitoring site-specific Contractor's Health and prevention program;
 - .6 be on construction site at all times during execution of work;
 - .7 inspect the work and ensure compliance with all regulatory requirements and those indicated in the contract documents or the site-specific prevention program.
 - .8 Keep a daily log of actions taken and submitting a copy to Departmental representative each week.

The safety officer's certificate shall be submitted to the Departmental representative before the start of the work.

- .2 When the hiring of a safety officer is not required or if this person is hired by the Departmental representative, the Contractor shall designate a competent person to supervise and take responsibility for health and safety, no matter the size of the construction site or how many workers are present at the workplace. This person shall be on construction site at all times and be able to take all necessary measures to ensure the health and safety of persons and property at or in the immediate vicinity of the construction site and likely to be affected by any of the work. The Contractor shall submit the name of this person to the Departmental representative before the start of work.

1.16 POSTING OF DOCUMENTS

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

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

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

representative may order cessation of work if, in his view, there is any hazard or threat to the safety or health of construction site personnel or the public or to the environment.

1.18 PREVENTION OF VIOLENCE

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

1.19 BLASTING

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

1.20 USE OF PUBLIC ROADS

- .1 Where it is necessary to encroach on a public road for operational reasons or to ensure the security of the workers, the occupants or the public (for example: the use of scaffolding, cranes, excavation work, etc.), the Contractor shall obtain at his own expense any authorizations and permits required by the competent authority.
- .2 The Contractor shall install at his own expense any signage, barricades or other devices needed to ensure the safety and security of the public and the Contractor's own facilities.

1.21 LOCKOUT-TAGOUT

- .1 For all work on electrically or otherwise energized equipment, the Contractor shall draw up and implement a general lockout-tagout procedure and submit it to the Departmental representative.
- .2 Supervisors and all workers concerned by work requiring lockout-tagout must have received training on lockout-tagout procedures by a recognized organization; Contractor shall submit training certificates to the Departmental representative.
- .3 Before starting the lockout-tagout procedure of a piece of equipment on an occupied site, Contractor must coordinate his work with the representative of the site if the interruption of the power sources can have an impact on the operations of the site or on its occupants.
- .4 Contractor must designate a qualified person as responsible for the lockout-tagout and must make sure that that person prepares a lockout-tagout data sheet for each piece of equipment involved. The lockout-tagout data sheet must be submitted to the Departmental representative at least 48 hours before the beginning of the work. The Departmental representative will review the data sheet with the representative of the site if the work takes place in an existing building. The data sheets for lockout-tagout must contain at least the following information:
 - .1 description of work to carry out;
 - .2 identification, description and location of the circuit and/or piece of equipment to lockout-tagout;
 - .3 identification of energy sources that feeds the piece of equipment;

- .4 identification of each cutout point;
- .5 sequence of lockout-tagout and the release of residual energy as well as the sequence of unlocking;
- .6 list of material needed for the lockout-tagout;
- .7 method of verification of zero energy implementation;
- .8 name and signature of the person who prepared the data sheet.

When required by the Departmental representative, Contractor must record all this information on the site's representative form.

- .5 At the time of lockout-tagout, the person responsible must date the data sheet and ensure that each worker involved in the work on the circuit/piece of equipment to lockout-tagout puts his name on the data sheet and signs it.

1.22 ELECTRICAL WORK

- .1 Contractor shall ensure that all electrical work is executed by qualified employees in accordance with the provincial regulation respecting vocational training and qualification.
- .2 Contractor shall respect all requirements of standard CSA Z462 *Workplace Electrical Safety Standard*.
- .3 No repairs or alterations shall be carried out on any live equipment except where complete disconnection of the equipment is not feasible.
- .4 Contractor shall respect all requirements prescribed in paragraph "LOCKOUT-TAGOUT" in this section.
- .5 Contractor shall advise in writing the Departmental representative of all the work that cannot be done with de-energized equipment and obtain his authorization. Contractor shall demonstrate to the Departmental representative that it is impossible to do the work with de-energized equipment and provide all the information necessary to request and obtain an energized electrical work permit (indicate working procedures, arc flash hazard analysis, protective perimeter, protective equipment, etc.) before the beginning of the work, excluding for the exceptions indicated in standard CSA Z462 Workplace electrical safety.
- .6 The energized electrical work permit on must contain at least the following elements:
 - a. description of the circuit and equipment and its location;
 - b. justification for having to do the work in an energized condition;
 - c. description of safe work practices to apply;
 - d. results of the shock hazard analysis;
 - e. limit of the protective perimeter against electric shocks;
 - f. results of the arc flash hazard analysis;
 - g. description of the arc flash protection boundary;
 - h. description of the personal protective equipment required;
 - i. description of the means to limit access to unqualified persons;

- j. proof that an information session has been carried out;
 - k. approval signature of the energized electrical work (by a person in authority or by the owner).
- .7 If for the operational requirements of the occupants of the site the representative of the site requires that the Contractor performs work in an energized condition, the Contractor shall obtain all the information required to request and obtain an energized electrical work permit (indicate working procedures, arc flash hazard analysis, protective perimeter, protective equipment, etc.) and have it signed by the representative of the site assigned by the Departmental representative before the beginning of the work.

1.23 FUNGAL CONTAMINATION

It is not anticipated that the work covered by the present specifications involves the manipulation of materials contaminated by mould; however, if the Contractor or the Departmental representative or his agent discover materials which are susceptible of being contaminated by mould, the Contractor must immediately stop the work and advise the Departmental representative. If more investigation demonstrates that the materials do contain mould, the Contractor shall comply with the following requirements.

Prior to starting any work where workers are likely to be in contact with materials contaminated by mould, the Contractor must:

1. Provide a written procedure for the work which respects all the requirements of the *Code de la sécurité pour les travaux de construction* S-2.1, r- 4, (Safety code for the construction industry), as well as the requirements indicated in the document “*Mould Guidelines for the Canadian Construction Industry*” published by the Canadian Construction Association (<http://www.cca-acc.com/documents/electronic/cca82/cca82.pdf>).
2. Demonstrate that he has all the material and equipment required on hand to respect the procedure and for safely conducting the work.

1.24 EXPOSURE TO SILICA

For any interior or exterior work generating silica, the Contractor must respect the following requirements, in addition to those in the *Code de sécurité pour les travaux de construction* S-2.1, r.4 (Safety code for the construction industry).

1. Work in wet environment or use tools with the inflow of water in order to reduce dustiness, if not, collect dust at the source and retain it with a high-efficiency filters not to propagate dust in the environment.
2. Clean surfaces and tools with water, never with compressed air.
3. Sand and pickle surfaces by using an abrasive containing less than 1% of silica (also called amorphous silica).
4. Install shields or other containment device to prevent silica dust from migrating toward other workers or the public.
5. Wear individual respiratory and ocular protection equipment during all the operations that could generate silica dust in accordance with the requirements of the *Code de sécurité pour les travaux de construction, S-2.1, r.4* (Safety code for the construction industry).
6. Wear coveralls to prevent contamination outside the construction site.
7. Do not eat, drink, or smoke in a dusty environment.
8. Wash the hands and the face before drinking, eating or smoking.

1.25 SANDBLASTING

Prior to starting any sandblasting work, the Contractor must:

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

1.26 EXPOSURE TO ANIMAL'S FECAL DROPPINGS

Prior to all work where workers are likely to come in contact with materials contaminated by animal's fecal droppings, the Contractor must:

1. Provide a written procedure for the work which respects all the requirements of the *Code de la sécurité pour les travaux de construction S-2.1, r- 4*, (Safety code for the construction industry), as well as the requirements indicated in these documents:
 - « *Des fientes de pigeons dans votre lieu de travail : méfiez-vous* » published by the CNESST (<https://arpac.org/wp-content/uploads/2018/04/fientes-pigeons.pdf>);
 - « *Ces pigeons empoisonneurs* » published by the APSAM (<https://www.apsam.com/sites/default/files/docs/publications/revue/vol13-no2p2.pdf>);
 - The PSPC reference « *Management and Prevention of Infectious Diseases on Construction Sites* » (<https://www.tpsgc-pwgsc.gc.ca/biens-property/sngp-npms/bi-rp/conn-know/securite-safety/infectieuses-infectious-eng.html>)
2. Demonstrate that he has all the material and equipment required on hand to respect the procedure and for safely conducting the work.

1.27 RESPIRATORY PROTECTION

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

1.28 FALL PROTECTION

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

1.29 SCAFFOLDINGS

In addition to the requirements of the *Code de sécurité pour les travaux de construction* (Safety code for the construction industry), the Contractor who uses scaffoldings must respect the following requirements:

Foundation

1. Scaffoldings shall be installed on a solid foundation so that it does not slip or rock.
2. Contractors wishing to install scaffoldings on a roof, overhang, canopy or awning shall submit their calculations and loads, as well as plans signed and sealed by an engineer to the Departmental representative and obtain his authorization before beginning installation.

Assembly, bracing and mooring

1. All scaffoldings shall be assembled, braced and moored in accordance with the manufacturer's instructions and the provisions of the *Code de sécurité pour les travaux de construction* (Safety code for the construction industry).
2. Where a situation requires the removal of part of the scaffoldings (e.g., crosspieces), the Contractor shall submit to the Departmental representative 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 scaffoldings where the span between two supports is greater than three metres, the Contractor shall provide the Departmental representative an assembly plan signed and sealed by an engineer.

Protection against falls during assembly

1. Workers exposed to the risk of falling more than three metres shall be protected against falls at all times during assembly.

Platforms

1. Scaffolding platforms shall be designed and installed in accordance with the provisions of the *Code de sécurité pour les travaux de construction* (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 *Code de sécurité pour les travaux de construction* (Safety code for the construction industry)
3. Scaffoldings of four sections (or six metres) high or more shall have a full platform covering the entire surface between the putlogs every three metres high or fraction thereof, and the components of that platform shall not be moved at any time to create an intermediate landing.

Guardrails

1. A guardrail shall be installed on every landing.
2. Cross braces shall not be considered as guardrails.
3. If the platforms are not covering the entire surface between the putlogs, the guardrail must be installed just above the edge of the platform so that there is no empty horizontal space between the platform and the guardrail.
4. Where scaffoldings has four sections (or six metres) high or more and full platforms are required, the guardrails shall be installed on each landing at the start of work and shall remain in place until the work is completed.

Access

1. The Contractor shall ensure that access to the scaffoldings does not compromise worker safety.
2. Where the platforms of the scaffoldings 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.

3. Notwithstanding the provisions of the *Code de sécurité pour les travaux de construction* (Safety code for the construction industry), stairs shall be installed on all scaffoldings that have six or more rows of uprights or is six sections (or nine metres) high or higher.

Protection of the public and occupants

1. When scaffoldings are installed in a zone accessible to the public, the Contractor shall take the necessary measures to prevent the public from having access to them and, if applicable, to the work or storage area located in the vicinity of these scaffolding.
2. Contractor must install covered walkways, nets or other similar devices to protect workers, the public and the occupants against falling objects. The means of protection must be approved by the Departmental representative.

Engineering plans

1. In addition to those required by the *Code de sécurité pour les travaux de construction* (Safety code for the construction industry), the Departmental representative reserves the right to require engineering plans for other types or configurations of scaffoldings.
2. A plan signed and sealed by an engineer is required for all scaffoldings that will be covered with a canvas, a tarpaulin or any other material that has wind resistance.
3. A certificate of conformity signed by an engineer is required in all cases where an engineering plan is required-and this, before anybody uses the facility. A copy of these documents must be available on the construction site at all times.

1.30 LIFTING LOADS WITH CRANE OR BOOM TRUCK

1. Unless specified otherwise, the Contractor must prepare a hoisting plan and submit it to the Departmental representative for all lifting operations done with a crane or a boom truck at least 5 days before these lifting operations begin. The hoisting plan must contain at a minimum the information listed at the end of this article.
2. The hoisting plan must be signed and sealed by an engineer for the following lifting operations:
 - a. lifting of concrete panels;
 - b. lifting mechanical/electrical equipment on a roof or on the floor of a building;
 - c. lifting of loads encroaching on the public road;
 - d. lifting large dimensions or very heavy loads;
 - e. all other lifting operation, in accordance with the requirements of the Departmental representative.
3. In addition to the above requirements, the Contractor must plan the hoisting operations in a way as to avoid that the loads pass over the occupied zones on the site. When there is no alternative, the hoisting plan must absolutely be signed and sealed by an engineer and must guarantee the security of the occupants in that zone; the plan must also be approved by the Departmental representative. The Departmental representative can, if he deems necessary, require that the work be done at night or on weekends.
4. Upon the beginning of the work on the construction site, the Contractor must submit the list of the hoisting plans anticipated for the whole project to the Departmental representative. That list shall be updated as needed if changes occur during the work.
5. In addition to the mechanical service inspection certificate, the annual inspection certificate and the crane logbook must be aboard all cranes and boom truck cabs.
6. The entire lifting area shall be marked off to prevent the entry of non-authorized persons.
7. The Contractor shall carefully inspect all of the slings and lifting accessories and make sure that those in poor condition are destroyed and scrapped.
8. Compressed-gas cylinders shall be lifted with a basket specially designed for this purpose.

MINIMUM CONTENT OF HOISTING PLAN

- a. Sketch indicating at a minimum, the location of the crane, the surrounding facilities, the zone covered by the hoisting operations, the pedestrian's pathways and vehicular routes, the security perimeter, etc.
- b. Weight of loads
- c. Dimensions of loads
- d. List of hoisting devices and weight of each
- e. Total weight lifted
- f. Maximum height of obstacles to clear
- g. Height of loads lifting relative to the surface of the roof (in the case of loads to be placed on roofs)
- h. Use of guide cables
- i. Type of crane used
- j. Crane capacity
- k. Boom length
- l. Boom angle
- m. Crane's radius of action
- n. Deployment of stabilizers
- o. Percentage usage of the crane's capacity
- p. Verification confirmation of hoisting equipment
- q. Identification of the crane operator and the person responsible for the hoisting operations with date and signatures

1.31 HOT WORK

Hot work means any work where a flame is used or a source of ignition may be produced, i.e., riveting, welding, cutting, grinding, burning, heating, etc.

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

Welding and cutting

In addition to the requirements prescribed in the preceding paragraphs, the Contractor must respect the following requirements:

1. Welding and cutting work must be carried out in accordance with the requirements of the *Code de Sécurité pour les travaux de construction, S-2.1, r.4* (Safety code for the construction industry) and CSA standard W117.2, Safety in Cutting, Welding and Allied Processes.
2. Air extraction system with filters must be used for all welding and cutting work performed inside.

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

1.32 STEEL STRUCTURE ERECTION OR DISMANTLING WORK

- .1 In addition to respecting section 3.24 du *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the Construction Industry), the Contractor must also respect the requirements described in the following paragraphs.
- .2 Contractor must submit the following documents to the Departmental representative before the beginning of steel structure erection work:
 - .1 erecting procedures in accordance with article 3.24.10 du *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the Construction Industry);
 - .2 rescue procedures for the release of a worker suspended in a safety harness within a maximum of 15 minutes; procedures must be adapted to the construction site and in accordance with article 3.24.4 of that same code; the procedure must be accompanied by a written confirmation that it has been tested;
 - .3 statement from an engineer that the anchor rods have been installed in accordance with the anchoring plan as required by the article 3.24.12 of that same code;
 - .4 hoisting procedures in cases where the lifting is done in one of the ways described in the article 3.24.15 of that same code;
 - .5 name of the individual identified as rescuer and his rescue training certificate;
 - .6 name of the individual identified as first-aid attendant and his first-aid training certificate.

- .3 The Contractor must make sure that the following documents are available for consultation on construction site at all times:
 - .1 Steel structure manufacturer's erection plan in accordance with the requirements of article 3.24.9 du *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the Construction Industry);
 - .2 Column anchor rods anchoring plan in accordance with the requirements of article 3.24.11 du *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the Construction Industry).

1.33 WORK NEAR BODIES OF WATER

1. For all work done near a body of water (such as work above water, work on a wharf, work on the edge of a watercourse, etc.), the Contractor must respect the requirement of the following paragraphs in addition to those of *Code de sécurité pour les travaux de construction* (Safety code for the Construction Industry).
2. The Contractor must plan his work in a way to implement safety measures to prevent any worker from falling in the water. The use of these measures should be favoured over the wearing of a life jacket.
3. Submit the following documents to the Departmental representative before the beginning of the work:
 - a. description of the body of water;
 - b. description of the work done next to this body of water;
 - c. plan of transportation on water adapted to the work and to the characteristics of the body of water;
 - d. rescue plan adapted to the work and to the characteristics of the body of water;

Each of the document listed above must contain at a minimum the information required in section 11 of the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the Construction Industry).

If there is the possibility that all or part of the work can be done during the winter, the safety measures included in the documents required above must be adapted accordingly.

4. The Contractor must submit to the Departmental representative the certificate of training required in article 11.2 du *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the Construction Industry) for the following individuals:
 - a. the person assigned to prepare the documents required in the preceding paragraph; and
 - b. each person responsible for the transport or rescue operations
5. If the rescue plan stipulates the use of a vessel, the Contractor must submit to Departmental representative the competency card or certificate for the individuals in the rescue team for his work, issued by Transport Canada.
6. The Contractor must include in his weekly inspection checklist the devices required in the articles 11.4 and 11.5 du *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the Construction Industry).
7. Ensure that a rescue vessel moored and in the water is available at each place where a worker may fall in the water. However, a vessel may serve more than one workplace on the same construction site provided the distance between any of these workplaces and the vessel is less than 30 m.

8. Where the construction site is a wharf, a pier, a quay or any similar structure, a ladder with at least two (2) rungs below the surface of the water shall be installed on the front of the structure every 60 m.

1.34 TEMPORARY HEATING

1. In addition to respecting section 3.11 of the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the Construction Industry), the Contractor must also respect the requirements described in the following paragraphs.
2. A portable fire extinguisher must be available at all times near the heating units, no matter what type of heating is used.
3. The heating units must always be used in accordance with the manufacturer's specifications.
4. If applicable, the canvas or tarpaulins used next to the heating units must be solidly fixed so as not to be projected on the heaters, on the pipes connected to the heaters or on any other heat source.
5. The gas cylinders must be installed in a way that they are protected from vehicle and other equipment traffic.
6. For the use of heating units other than electric, the Contractor must install a carbon monoxide detector in the work area, next to the heating units and/or the workers, throughout the course of the heating period. The Contractor must immediately apply the corrective measures required to the heating units if the detector's alarm goes off.
7. The Contractor must ensure a minimum surveillance of the heating units outside the hours of work (nights and weekends). He must submit a surveillance plan to the Departmental representative before the use of the heating units.

1.35 DIVING OPERATIONS

In accepting this contract, the Contractor agrees to satisfy the following requirements:

1. Compliance with all the requirements of the *Règlement sur la santé et la sécurité du travail* (S-2.1, r.13) (Regulation respecting occupational health and safety), more precisely section XXVI. I, entitled *Travail effectué en plongée* (Underwater Work). Compliance, furthermore, with the latest editions of standards CAN/CSA Z275.2 – *Occupational Safety code for Diving Operations*, CAN/CSA Z275.1 – *Hyperbaric Chambers* and CAN/CSA Z275.4 – *Competency Standard for Diving Operations*. In the event of conflict between these requirements, the most stringent requirement shall apply.
2. In addition to the above, in cases where construction work is involved, compliance with the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the Construction Industry).
3. Before starting the work, submit to the Departmental representative the following documents, as per the *Règlement sur la santé et la sécurité au travail* (S-2.1, r.13) (Regulation respecting occupational health and safety):
 - a. 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;
 - b. the workplace first-aid training certificate of each member of the dive team;
 - c. the medical certificate of each member of the dive team;

- d. for each dive included in this contract, a dive plan containing the following information, in addition to that required under the *Règlement sur la santé et la sécurité au travail* (Regulation respecting occupational health and safety):
 - i. the thermal protection to be used;
 - ii. the repetitive dive factor;
 - iii. the no-decompression limit;
 - iv. the circumstances in which the dive must be terminated;
 - v. the procedures to be followed to ensure that machinery, equipment or devices that could create a hazard have been locked out;
 - vi. the decompression table to be used, as required;
 - e. notification confirming that a system for communicating with the *Service d'assistance médicale pour les urgences en plongée* (Medical assistance service for diving emergency) is available at the diving station at all times.
4. The Contractor shall take into account the following specific characteristics of the worksite, and adapt its dive plan accordingly:
 - .1 Dive near the entrance or exit of, or inside of, a submerged water line
 - .2 Dive in a waterway
 - .3 Dive at a contaminated environment
 - .4 Ice diving
5. Where the dive takes place at one of the following locations, provide the Departmental representative confirmation that the authorities concerned have been notified:
 - a. upstream or downstream from a hydraulic structure or submerged water line;
 - b. in marine waterways;
 - c. in port facilities.
6. If the dive station is more than 2 metres above the water, provide the Departmental representative:
 - a. 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;
 - b. a drawing of the device used to hoist the stage or other device, unless that device is a crane or boom truck.
7. If the dive is carried out from a vessel, provide the Departmental representative the following documents:
 - a. proof of qualification of the vessel operator;
 - b. the vessel's certificate of compliance from Transport Canada.
8. Before starting the work, carry out an underwater rescue simulation at the site, as required under section 312.31 of the *Règlement sur la santé et la sécurité du travail* (S-2.1, r.13) (Regulation respecting occupational health and safety).
9. On a daily basis, complete and provide to the Departmental representative a checklist confirming the presence and condition of the equipment required at the dive site as per the dive plan.
10. Ensure that all other documents required under section XXVI of the *Règlement sur la santé et la sécurité du travail* (S-2.1, r.13) (Regulation respecting occupational health and safety) are available at the construction site at all times (diving logbook, diver's logbook, etc.).

1.36 HEALTH AND SAFETY SUBORDINATION AGREEMENT

Project: _____ **Address:** _____

EXTERNAL CONTRACTOR

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

- inform my employees of the content of the Principal Contractor's prevention program and ensure that its content are complied with at all times;
- apply the prevention program that is specific to the activities that we carry out under this project;
- inform the Principal Contractor of my actions or dealings on the construction site and obtain the Principal Contractor's agreement before the start of work; and
- follow the health and safety directives provided by the representative of the Principal Contractor on the construction site and, depending on requirements, attend training sessions and health and safety meetings organized by the representative of the Principal Contractor.

Name of representative: _____

Name of business: _____

Description of work to be done on the construction site: _____

Approximate dates of work (start-end): _____

Signature: _____ Date: _____

PRINCIPAL CONTRACTOR

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

Name of representative: _____

Name of the Principal Contractor's business: _____

Signature: _____ Date: _____

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

1.1 REFERENCES

- .1 Canada Shipping Act, Transport Canada, 2001, amended 2013-12-01.
- .2 Canadian Coast Guard Regulations, Fisheries and Oceans Canada.
- .3 Canadian Environmental Assessment Act, 2012, amended 2019-08-28.
- .4 Canadian Environmental Protection Act, 1999, amended on 2020-10-06.
- .5 Fisheries Act, 1985, Fisheries and Oceans Canada, amended 2019-08-28.
- .6 Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters, 1998.
- .7 Migratory Birds Convention Act, 1994, Environment Canada, amended 2017-12-12.
- .8 Canadian Navigable Waters Act, 1985. Transport Canada, amended 2019-10-14.
- .9 Quebec Environmental Quality Act.
- .10 Species at Risk Act, 2002, amended 2020-10-06.
- .11 The Federal Policy on Wetland Conservation, 1991, Environment Canada.
- .12 Transportation of Dangerous Goods Act, 1992, Transport Canada, amended 2019-08-28.
- .13 Workplace Hazardous Materials Information System (WHMIS), Health Canada.

1.2 DEFINITIONS

- .1 Hazardous Material: Product, substance, or organism that is used for its original purpose; and that is either dangerous goods or a material that may cause adverse impact to the environment or adversely affect health of persons, animals, or plant life when released into the environment.
- .2 Wetlands: land where the water table is at, near or above the surface or which is saturated for a long enough period to promote such features as wet-altered soils and water tolerant vegetation. Wetlands include organic wetlands or "peatlands," and mineral wetlands or mineral soil areas that are influenced by excess water but produce little or no peat.
- .3 Watercourse: refers to the bed and shore of a river, stream, lake, creek, pond, marsh, estuary or salt-water body that contains water for at least part of each year.
- .4 Alien species: refers to a species or subspecies introduced outside its normal distribution whose establishment and spread threaten ecosystems, habitats or species with economic or environmental harm.
- .5 Buffer zone: a vegetated land that protects watercourses from adjacent land uses. It refers to the land adjacent to watercourses, such as streams, rivers, lakes, ponds, oceans, and wetlands, including the floodplain and the transitional lands between the watercourse and the drier upland areas.

1.3 TRANSPORTATION

- .1 Comply with the conditions prescribed for approval under the Canadian Navigable Waters Act (CNWA).
- .2 Transport hazardous materials and hazardous waste in compliance with Federal Transportation of Dangerous Goods Act.

- .3 Any tools, equipment, vehicles, temporary structures or parts thereof used or maintained for the purpose of building or placing a work in navigable water shall not be permitted to remain in place after the completion of the project.
- .4 Do not overload trucks when hauling material. Secure contents against spillage.
- .5 Maintain trucks clean and free of mud, dirt and other foreign matter.
- .6 Avoid potential release of contents and of any foreign matter onto highways, roads and access routes used for the Work. Take extra care when hauling material and other hazardous materials. Immediately clean any spillage and soils.
- .7 Before commencement of work, advise the Departmental Representative of the existing roads and temporary routes proposed to be used to access work areas and to haul material to and from the site.
- .8 Vessels must be permitted safe access through the worksite at all times, and shall be assisted as necessary.
- .9 All materials and equipment used in construction must be marked in accordance with the Collision Regulations of the Canadian Shipping Act, 2001 when located on the waterway.

1.4 OPERATION OF MACHINERY

- .1 Confirm machinery arrives on site in a clean condition and is maintained free of fluid leaks, invasive species and noxious weeds.
- .2 Whenever possible, operate machinery on land above the high water mark, on ice, or from a floating barge in a manner that minimizes disturbance to the banks and bed of the water body.
- .3 Wash, refuel and service machinery and store fuel and other materials for the machinery in such a way as to prevent any deleterious substances from entering the water.

1.5 CONTAINMENT AND SPILL MANAGEMENT

- .1 Comply with Federal and Provincial laws, regulations, codes, standards and guidelines for the storage of fuel and petroleum products on site.
- .2 Do not place fuel storage tanks and store fuel or other petroleum products within a 30 metre buffer zone of watercourses and wetlands. Do not fuel or lubricate equipment within this 30 metre buffer zone. Obtain approval from Departmental Representative of acceptable location on site for fuel storage and equipment service.
- .3 Do not dump petroleum products or any other deleterious substances on ground or in the water.
- .4 Be diligent and take all necessary precautions to avoid spills and contamination of soil and water (both surface and subsurface) when handling petroleum products on site and during fueling and servicing of vehicles and equipment.
- .5 Maintain vehicles and equipment in good working order to prevent leaks on site.
- .6 Develop soil, sediment and surface water quality: develop an effective emergency plan in the event of an environmental incident, spill (sediment or deleterious substances) or fire related to the characteristics and constraints of the site and its environment and communicate to all persons involved, including the Departmental Representative.

- .1 Provide hazardous materials management plan (storage, transport, disposal, recovery, control and decontamination measures).
- .2 Minimize the number of oil tanks for refueling machinery. Fit tanks in accordance to the regulations in force, fixed and out of the ground, capable of collecting and passively containing 150% of the nominal capacity, and provide them with a double wall with a view to regularly check the presence of a possible leak.
- .3 Implement a waste management system that considers the nature of the waste and includes storage and disposal containers appropriate to its nature.
- .4 All personnel at the work site must be fully trained in spill response procedures, methods and use of relevant equipment and materials.
- .5 Develop an Environmental Emergency Response Plan that identifies the persons and authorities to be contacted and the measures to be implemented in the event of a spill. This emergency plan must be submitted to Transport Canada at least five (5) working days prior to the commencement of work.
- .6 Maintain complete emergency response kits (absorbents, waterproof bags, plugs, gloves, etc.) at all times in the vicinity of the work area to contain any spills. Ensure personnel know how to use such equipment. In the event of a spill of oil or any other deleterious substance any means necessary to stop the leak and contain the spilled product must be taken.
- .7 Immediately report any accidental spills to the Project Emergency Plan Manager who will ensure that the affected authorities and contacted without delay, and the affected areas is identified, clean-up and manage contaminated soils, residual soils left in place petroleum residues and other hazardous waste, as applicable, in accordance with existing laws and regulations.
- .8 In the event of an accidental release of diesel, gasoline or other environmental incident, the incident must be reported immediately to the Departmental Representative and the following authorities:
 - .1 Alert and Warning Network (AAR): 1- 800-363-4735.
 - .2 Site Supervisor.
 - .3 These phone numbers and other contact information must always be posted clearly on the construction site.
- .9 Make every effort to clean up the source of the spill within the safety limits. Deploy a barrier and/or oil-absorbing mat to contain the spill. Store mats or dams in an identified container on the shoreline and tow in place to absorb or contain the spill complete to the Departmental Representative's satisfaction.
- .10 Confine water contaminated by an accidental spill. Contaminated soils or water to be handled and disposed of directly by a specialized company in accordance with Minister of Sustainable Development, Environment, and Fight Against Climate Change (MELCC) regulations and guidelines complete to the Departmental Representative's satisfaction. Provide soil sampling reports outlining quality of the soils left in place, confirming that the affected site has been properly remediated.
- .11 Confine water that has been in contact with uncured or partially hardened concrete (such as concrete mixer cleaning water and other equipment) is not released into the aquatic environment.

- .12 Disposal of waste materials is prohibited by dumping them into the watercourse or into storm or sanitary sewers.
- .13 Maintain and refuel vehicles and equipment on watertight surfaces to contain any leaks and spills.
- .14 Recommend the use of biodegradable hydraulic oil in machinery (hydraulic shovels) that will work within 30 metres of a watercourse or wetland to reduce impacts on the environment.
- .15 Prohibit the release of contaminants into the Gulf of St. Lawrence, an aquatic environment or wetland.

1.6 HAZARDOUS MATERIAL HANDLING

- .1 Store and handle hazardous materials in accordance with applicable federal and provincial regulations, codes, standards and guidelines. Store in location that will prevent spillage into the environment.
- .2 Label containers to WHMIS requirements and keep SDS data sheets on site for all hazardous materials.
- .3 Maintain written inventory of all hazardous materials kept on site. List product name, quantity and storage date.
- .4 Store and handle flammable and combustible materials in accordance with National Fire Code.

1.7 DISPOSAL OF WASTES

- .1 Do not bury rubbish, demolition debris and waste materials on site.
- .2 Dispose and recycle demolition debris and waste materials in accordance with Provincial Waste Management requirements.
- .3 Do not dispose of hazardous waste, volatile materials (such as mineral spirits, paints, thinners etc.) and petroleum products into waterways, storm or sanitary sewers or in waste landfill sites.
- .4 Dispose of hazardous waste in accordance with applicable federal and provincial laws, regulations, codes and guidelines.
- .5 Concrete waste:
 - .1 Do not discharge residual or rejected concrete on site.
 - .2 Immediately clean any accidental release of concrete on site prior to solidification.
 - .3 Do not wash and clean concrete vehicles on site.
 - .4 Perform dumping of residual material and truck cleaning operations only at the concrete plant. Follow environmental regulations and good practices as approved by MELCC and other authorities having jurisdiction.
 - .5 Concrete will be broken into pieces of 200 to 300mm and disposed of according to the standards in force at a project site, applicable regulations and guidelines at an authorized disposal site. Remove all unused materials waste and debris from the construction site and dispose of in accordance with applicable regulations.

- .6 Remove unused materials, waste and debris of all kinds from the work site and dispose of them at an authorized site in accordance with applicable regulations.

1.8 WATER QUALITY

- .1 Conduct visual monitoring for suspended solids daily during periods of in-water works, and other related works. If any changes occur in the turbidity of the water in the vicinity of the work area as a result of construction activities, the work should immediately stop and the Department of Fisheries and Oceans – Fisheries Protection Program contacted at (902) 426-3909 to determine if additional mitigation measures are required.
- .2 Where work may affect the water quality adjacent to water intake lines used by lobster holding facilities, fish processing facilities and other harbor users, schedule work in cooperation with the Harbour Authority as directed by the Departmental Representative to minimize interference and impact to harbour users.
- .3 Do not wash down equipment within a 30 metre buffer zone of a wetland, watercourse or other identified environmentally sensitive area.

1.9 SOCIOECONOMIC RESTRICTIONS

- .1 Abide by municipal and provincial regulations for any restrictions on work performed during the nighttime and on flood lighting of the site. Obtain applicable permits.
- .2 Place flood lights in opposite direction of adjacent residential and business areas.
- .3 Use work equipment and machinery with purposely designed mufflers to reduce noise on site to lowest possible level. Maintain mufflers in good operating condition at all times.

1.10 BIRD AND BIRD HABITAT

- .1 Comply with Federal and Provincial laws, Migratory Birds Convention Act (MBCA) in regard to the protection of migratory birds, their eggs, nests and their young encountered on site and in the vicinity.
- .2 Before work begins, verify the presence of water bird nesting on the structures where work will take place. If any nest(s) are found, immediately advise the Departmental Representative prior to commencing work.
- .3 If a nest containing eggs or chicks of migratory birds is found in the vicinity or in the work area, stop all noisy activities in the vicinity of the nesting site. Protect the nest(s) within the project site. Immediately contact ECCC Canadian Wildlife Service and the Departmental Representative.
- .4 Minimize disturbance to all birds on site and adjacent areas during the entire course of the Work.
- .5 Do not approach seabirds, waterfowl and shorebirds when anchoring equipment, accessing wharves or ferrying supplies.
- .6 During nighttime work, position flood lights in opposite direction of nearby bird nesting habitat.
- .7 All machinery must be well muffled. If necessary, trucks may be required to avoid the use of “hammer” braking along specific sections of the route.
- .8 Do not leave food scraps and garbage at the work site.

- .9 All equipment to be used in or over the marine environment is to be free from leaks or coating of hydrocarbon based fluids and/or lubricants harmful to the environment. Hoses and tanks are to be inspected on a regular basis to prevent fractures and breaks.
- .10 Construction activities will be carried out during times acceptable to local authorities.

1.11 FISH AND FISH HABITAT

- .1 Do not carry out noisy work (e.g. driving piles by vibratory driving or driving) or generating the suspension of sediments in the water, between April 1 and May 31 to protect the spring spawning period and incubation of Atlantic herring eggs.
- .2 Do not carry out work generating the suspension of sediments in the water between July 16 and August 10 in order to protect the period of maximum larval concentration for American lobster and rock crab. endangered (leatherback turtle, blue whale, right whale and great white shark) is observed within 200 m of the aquatic work area, work must be stopped and wait for the animal to move more than 200 m from the project site.
- .3 When driving the piles, if possible, prioritize the use of lower impact alternatives to driving, such as vibratory driving, in order to limit the impact on the fish.
- .4 Carry out work for a maximum period of 16 hours per day, to allow a recovery period of 8 hours continuous at night, without additional noise in the aquatic environment.
- .5 For work carried out above the level of the upper high tide sea (HHWL), implement effective measures to limit the contribution of sediment from the site to the aquatic environment and ensure their maintenance (p. eg: sediment barrier, berms, sediment trap, sedimentation basin, temporary stabilization of embankments, diversion of water to vegetation zones). The measures must remain effective during the temporary closure of the site and during periods of flooding or during heavy rains.
- .6 Confirm that activities in the water, or related structures in the water do not interfere with fish passage, reduce channel width or water flows.
- .7 Do not immerse machines in water.
- .8 When the machinery must be submerged in water to carry out the work or to pass below the level of the high water high tide (HHWL), take the necessary precautions to minimize the impact and protect the environment.
- .9 Do not extract borrow material from the seabed of the harbor and from the shore.
- .10 Be aware of the risk of contamination of fish habitat on the work site following the introduction of exotic species into the water.
- .11 In order to minimize the possibility of contamination of fish habitat, all construction material that will be submerged in the water of a watercourse, or which may possibly come into contact with such water during work, should be cleaned and washed to ensure it is free from marine organisms and exotic species.
 - .1 Construction equipment includes boats, barges, cranes, excavators, transport trucks, pumps, pipes and all other tools and miscellaneous pieces of equipment previously used in a marine environment.
- .12 The cleaning and washing of the equipment must be carried out immediately upon its arrival on the site, during the entire period of use of the equipment on the site and before it leaves the site to the satisfaction of the Departmental Representative.

- .13 Carry out cleaning and washing operations as follows:
 - .1 Scrape and remove large accumulations of mud and dispose of properly.
 - .2 Wash all surfaces of equipment using a pressurized fresh water supply.
 - .3 Immediately after washing with fresh water, apply a thick coat of undiluted vinegar spray or other approved cleaning product to completely remove all plant, animal and sediment material.
 - .4 Check for the presence of plant, animal and sediment matter on the bilges and filters and remove them if necessary.
 - .5 Evacuate stagnant water on equipment and allow it to dry completely before use.
 - .6 Once the material has been removed from the water, evacuate the stagnant water and allow it to dry completely before removing it from the site.
- .14 Do not clean or wash inside the 30 meter buffer zone of a wetland, watercourse or other area identified as environmentally sensitive.
- .15 Insurance file register:
 - .1 Maintain a continuous record of past and current use and washings of all equipment to demonstrate mitigation measures implemented against contamination of fish habitat by exotic species.
 - .2 Write data in a log attached to the hard cover.
 - .3 Include the following information:
 - .1 date and place where equipment was previously used in a watercourse or wetland;
 - .2 the type of work performed;
 - .3 wash dates for each piece of equipment;
 - .4 method of cleaning and cleaning product (s) used.
- .16 Keep the insurance file register up to date from one project to another. Upon request, submit the register to the Departmental Representative for review.
- .17 Comply with the requirements and recommendations of Environment Canada and the Department of Fisheries and Oceans - Oceans and Habitat Directorate for cleaning and washing of equipment.
- .18 Marine equipment may be inspected by PSPC or DFO to ensure that invasive species are not introduced into the marine environment.

1.12 AIR QUALITY

- .1 Keep airborne dust and dirt resulting from the work on site to an absolute minimum.
- .2 Employ dust suppression by the application of water when required. Apply dust control measures to roads, parking lots and work areas. The Departmental Representative will determine locations where water is to be applied and the times at which is to be applied. Waste oil must not be used for dust control under any circumstances.
- .3 Spray surfaces with water or other environmentally approved product. Use purposely suited equipment or machinery and apply in sufficient quantity and frequency to provide effective result and continued dust control during the entire course of the work.
- .4 Do not use oil or any other petroleum products for dust control.

- .5 Construction activities must be carried out during times acceptable to local authorities and smaller, less disturbing equipment will be used where possible.
- .6 During the concrete demolition work, the contractor will be required to take the necessary steps to comply with the provisions of the Clean Air Regulations (AAR).
 - .1 Keep vehicles and equipment in good working order (e.g., exhaust system).
 - .2 Turn off engines of unused construction equipment as soon as possible.

1.13 FIRES

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

1.14 SOUND CLIMATE

- .1 Comply with applicable municipal noise regulations and adjust machinery operations accordingly, if applicable.
- .2 Limit idling of truck, machinery and equipment engines not in use.
- .3 Use machinery and equipment in good working order to minimize noise.
- .4 Inform the Municipality of Cap-aux-Meules of planned activities and schedule of work.
- .5 Take precautions to minimize the overall noise level

1.15 INVASIVE ALIEN SPECIES

- .1 Provide evidence of the origin of the equipment and that it is free of invasive alien species. Use clean and store marine equipment on land prior to completion of work. If the equipment is already in the water, provide written evidence to the Departmental Representative that the equipment has remained in the estuary or Gulf of St. Lawrence for the past 12 months or more and is free of invasive alien species just prior to mobilizing it to the site.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 11 00 – Summary of Work
- .2 Section 01 29 83 – Payment – Testing Laboratory Services

1.2 INSPECTION

- .1 Allow Department 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 Department 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 Department Representative will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Departmental Representative shall pay cost of examination and replacement.

1.3 INDEPENDENT INSPECTION AGENCIES

- .1 Independent Inspection/Testing Agencies will be engaged by the departmental Representative for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Departmental Representative.
- .2 Provide equipment required for executing inspection and testing by appointed agencies.
- .3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative. Pay costs for retesting and reinspection after correction.

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 in advance of requirement for tests, in order that attendance arrangements can be made.

- .2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.
- .3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.6 REJECTED WORK

- .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .2 Make good other Contractor's work damaged by such removals or replacements promptly.
- .3 If in opinion of Departmental Representative, it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Departmental Representative will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Departmental Representative.

1.7 REPORTS

- .1 Submit Four (4) copies of inspection and test reports to Departmental Representative.
- .2 Provide copies to subcontractor of work being inspected or tested, and to manufacturer or fabricator of material being inspected or tested.
- .3 Provide an electronic version of documents listed above.

1.8 TESTS AND MIX DESIGNS

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

1.9 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 as specified in specific Section (if any), and as acceptable to the Departmental Representative.
- .3 Prepare mock-ups for Departmental Representative review with reasonable promptness and in orderly sequence, to not cause delays in Work.
- .4 Failure to prepare mock-ups in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .5 If requested, Departmental Representative will assist in preparing schedule fixing dates for preparation.

- .6 Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.

1.10 MILL TESTS

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

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 14 00 – Work Restrictions

1.2 ACCESS

- .1 Provide and maintain adequate access to project site.

1.3 CONTRACTOR'S SITE OFFICE

- .1 Establish on the site of the work and keep open at all times during the execution of the work an office where all letters, orders, notices and other communications may be received or acknowledged either by the Contractor or his authorized agent or representative. Provide a telephone and fax machine in the office.
- .2 Keep one up-to-date copy of the Contract Documents, bulletins and other materials as specified.

1.4 DEPARTMENTAL REPRESENTATIVE'S SITE OFFICE

- .1 Set up a ventilated office, heated to a temperature of 22 degrees Celsius, equipped with lighting equipment ensuring a lighting level of 750 lux and of sufficient size to accommodate 12 people to allow site meetings to be held, and provide a table and chairs.
- .2 Provide a complete and identified first aid kit and store it in an easily accessible place.
- .3 If necessary, subcontractors must set up their own office. Show them where they can settle.
- .4 Office of the Departmental Representative:
 - .1 Set up a temporary office for the Departmental Representative.
 - .2 The office must measure, inside, at least 5 m long x 3 m wide x 2.4 m high, and have a floor located 0.3 m above the ground, as well as four (4) windows opening at 50% and a lockable door.
 - .3 The office must be well insulated and have a heating system ensuring an ambient temperature of 22 degrees Celsius when the outside temperature is 20 degrees Celsius. The office must be air-conditioned in the summer.
 - .4 Walls and ceiling to be covered with plywood panels, hard fiber panels or plasterboard, then painted. The floor must be covered with 19 mm thick plywood panels.
 - .5 The office must be equipped with an electric lighting system ensuring a lighting level of 750 lux. Provide and install the following furniture in the office: 2 desks of 1500 mm x 900 mm with drawers, 2 revolving chairs, 4 chairs, 1 drawing table, 1 stool, 1 support for plans, 1 water cooler, 1 Wall mounted notice board with minimum dimensions of 750mm x 900mm, 1 file cabinet with drawers and clothes racks. The filing cabinet will be equipped with an effective lock that cannot be easily opened or bypassed.
 - .6 Provide and pay for the installation of high speed Internet service.

- .7 Set up a private toilet near the office and install a chemical or flush toilet, a sink and a mirror, and ensure the supply of paper towels and toilet paper.
- .8 Keep in good working order, a chilled drinking water fountain, a refrigerator, a chemical or flush toilet, the power supply, the photocopier (scanner printer), the Internet connection, the system heating, air conditioning and lighting.
- .9 The location of the site offices must be within the area reserved for the Contractor, as shown on the plans. Maintain safe access to site offices throughout the work.
- .10 Site offices must be set up before work begins.
- .11 Keep the premises clean throughout the work.

1.5 STORAGE SHEDS

- .1 Provide adequate weather tight sheds with raised floors, for storage of materials, tools and equipment which are subject to damage by weather.
- .2 Make arrangements with the Departmental Representative for on-site storage areas.

1.6 SANITARY FACILITIES

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

1.7 PARKING

- .1 Make arrangements with the Departmental Representative to provide parking space for work force.

1.8 POWER

- .1 Arrange, pay for and maintain temporary electrical power supply in accordance with governing regulations and ordinances.
- .2 Install temporary facilities for power such as pole lines and cables to approval of local power supply authority.

1.9 WATER SUPPLY

- .1 Arrange, pay for and maintain temporary water supply in accordance with governing regulations and ordinances.

1.10 BARRRRICADES

- .1 Provide and maintain sufficient barricades, fencing, notices, warning signs, light signals, etc. for the protection of adjoining property and to warn others and workmen engaged on the job of the dangers caused by the work.
- .2 Types and location of barricades, etc. to be in accordance with local regulations and to the satisfaction of Departmental Representative.
- .3 The presence of such barricades, lights, etc. will not relieve the Contractor of the responsibility for any damages.

1.11 SECURITY

- .1 Make arrangements with the Departmental Representative for security of his equipment, materials, damages resulting from fire and theft.

1.12 SITE SIGNS AND NOTICES

- .1 Only Project Identification and the Departmental Representative/Contractor signboards and notices for safety or instruction are permitted on site.
- .2 Format, location and quantity of site signs and notices to be accepted by Departmental Representative.
- .3 Signs and notices for safety or instruction to be in English and French languages, or commonly understood graphic symbols.

1.13 ALLOWABLE LOADS

- .1 The contractor must ensure the stability of the existing wharf, transfer bridges and dolphins at all times during the work. It is the responsibility of the contractor to ensure that his work method and equipment are compatible with the structural capacity of the wharf and the maintenance of operations.
- .2 Do not overload or allow any part of the work to be overloaded so as not to compromise its integrity.
- .3 If necessary, provide the Departmental Representative with a temporary shoring plan for approval. The plan must be stamped and signed by a professional engineer authorized to practice in the province of Quebec.

1.14 REMOVAL OF TEMPORARY FACILITIES

- .1 Remove temporary facilities from site when directed by Departmental Representative.
- .2 When the worksite is closed down for a period of time, keep temporary facilities operational until no longer required by Departmental Representative.

Part 2 PRODUCTS

2.1 NOT USED

- .1 Not applicable

Part 3 EXECUTION

3.1 NOT USED

- .1 Not applicable

END OF SECTION

1.1 RELATED REQUIREMENTS

- .1 Section 01 45 00 – Quality Control

1.2 REFERENCE STANDARDS

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

1.3 QUALITY

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

1.4 COMPLIANCE

- .1 At the request of the Departmental Representative, when the materials or equipment are prescribed according to a standard or performance specifications, obtain from the manufacturer a report from an independent testing laboratory, certifying that the materials or equipment comply meet or exceed prescribed requirements.

1.5 PRODUCTS AVAILABILITY

- .1 Immediately upon receiving the bid acceptance notification, 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.

1.6 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 Place construction lumber as well as sheet or panel materials on rigid, flat supports so that they do not rest directly on the ground. Give a low slope in order to favor the flow of condensation water.
- .7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- .8 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.
- .9 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name and identification plates.

1.7 TRANSPORTATION

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

1.8 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.

1.9 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 or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative, whose decision is final.

1.10 CO-ORDINATION

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

1.11 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.

1.12 FASTENINGS - GENERALITIES

- .1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.
- .2 Prevent electrolytic action between dissimilar metals and materials.
- .3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.
- .4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.
- .5 Keep exposed fastenings to a minimum, space evenly and install neatly.
- .6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

1.13 FASTENINGS - EQUIPMENT

- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.
- .3 Bolts may not project more than one diameter beyond nuts.

- .4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

1.14 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.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 11 00 - SUMMARY OF WORK
- .2 Section 01 29 83 – PAYMENT – TESTING LABORATORY SERVICES
- .3 Section 01 45 00 - QUALITY CONTROL

1.2 REFERENCE STANDARDS

- .1 Owner's documents indicating existing survey control points and property limits.

1.3 QUALIFICATIONS OF SURVEYOR

- .1 Qualified registered land surveyor, licensed to practise in Place of Work, acceptable to Departmental Representative.

1.4 SURVEY REFERENCE POINTS

- .1 Existing base horizontal and vertical control points are designated on drawings.
- .2 Locate, confirm and protect control points prior to starting site work. Preserve permanent reference points during construction.
- .3 Make no changes or relocations without prior written notice to Departmental Representative.
- .4 Report to Departmental Representative when reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
- .5 Require surveyor to replace control points in accordance with original survey control.

1.5 SURVEY REQUIREMENTS

- .1 Establish two permanent benchmarks on site, referenced to established benchmarks by survey control points. Record locations, with horizontal and vertical data in Project Record Documents.
- .2 Establish lines and levels, locate and lay out, by instrumentation.
- .3 Stake the existing quaywall.
- .4 Establish lines and levels for marine equipment (Bollards, fenders).
- .5 Establish lines and levels for mechanical and electrical work, if any.

1.6 EXISTING SERVICES

- .1 Before commencing work, establish location and extent of service lines in area of Work and notify Departmental Representative of findings.
- .2 Remove abandoned pipes that are in conflict with the work.

1.7 LOCATION OF EQUIPMENT AND FIXTURES

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

1.8 RECORDS

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

1.9 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit name and address of Surveyor to Departmental Representative.
- .2 Submit certificate signed by surveyor certifying and noting those elevations and locations of completed Work that conform with Contract Documents.

1.10 SUBSURFACE CONDITIONS

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

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 RECORD DRAWINGS

- .1 Departmental Representative will provide two (2) sets of white prints for record drawing purposes.
- .2 Maintain project record drawings and accurately record deviations from contract documents caused by site conditions and changes ordered by Departmental Representative.
- .3 Mark changes in red coloured ink.
- .4 Record following information:
 - .1 Elevations of various elements in relation to Chart Datum.
 - .2 Field changes in dimensions and details.
 - .3 Changes made by Change Order.
- .5 At completion of project and prior to final inspection, neatly transfer notations to second set and submit both sets to Departmental

END OF SECTION

Part 1 General

1.1 GENERAL

- .1 Conduct cleaning and disposal operations to comply with local ordinances and antipollution laws.
- .2 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .3 Prevent accumulation of waste which creates hazardous conditions.

1.2 PROJECT CLEANLINESS

- .1 Maintain Work in tidy condition, at least for daily basis, free from accumulation of waste products and debris, including that caused by Owner or other Contractors.
- .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site, unless approved by Departmental Representative.
- .3 Clear snow and ice from access to facilities, bank/pile snow in designated areas only.
- .4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .5 Provide and use marked separate bins for recycling. Refer to Section 01 74 21- Construction/Demolition Waste Management and Disposal.
- .6 Dispose of waste materials and debris off site.
- .7 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate existing and newly built systems.

1.3 FINAL CLEANING

- .1 In preparation for acceptance of the project on an interim or final certificate of completion perform final cleaning.
- .2 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .3 Remove waste products and debris caused by the Contractor himself and leave Work clean and suitable for occupancy.
- .4 Prior to final review remove surplus products, tools, construction machinery and equipment.
- .5 Remove waste products and debris including that caused by Owner or sub-Contractors.
- .6 Remove waste materials from site at regularly scheduled times or dispose of as directed by Department Representative. Do not burn waste materials on site, unless approved by Department Representative.
- .7 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

- .8 Remove snow and ice from access to the wharf.

1.4 WASTE MANAGEMENT AND DISPOSAL

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

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 DEFINITIONS

- .1 Recyclable: ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse.
- .2 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.
- .3 Recycling: process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- .4 Reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes:
 - .1 Salvaging reusable materials from re- modelling projects, before demolition stage, for resale, reuse on current project.
 - .2 Returning reusable items including pallets or unused products to vendors.
- .5 Salvage: removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.
- .6 Separate Condition: refers to waste sorted into individual types.
- .7 Source Separation: acts of keeping different types of waste materials separate beginning from first time they became waste.
- .8 Waste Management Coordinator (WMC): Contractor representative responsible for supervising waste management activities.

1.2 WASTE MANAGEMENT WORKPLAN

- .1 Prior to commencement of work, prepare a Waste Management Workplan.
- .2 Workplan to include:
 - .1 Waste reduction practices.
 - .2 Material source separation process.
 - .3 Procedures for sending recyclables to recycling facilities.
 - .4 Procedures for sending non-salvageable items and waste to approved waste processing facility or landfill site.
 - .5 Training and supervising workforce on waste management at site.
 - .6 Descriptions of and anticipated quantities in percentages of materials to be salvaged reused, recycled and landfilled.
 - .7 Schedule of selective demolition.
 - .8 Number and location of dumpsters.
 - .9 Anticipated frequency of tipping.
 - .10 Name and address of haulers, waste facilities and waste receiving organizations.

- .3 Develop Workplan in collaboration with all subcontractors to ensure all waste management issues and opportunities are addressed.
- .4 Implement and manage all aspects of Waste Management Workplan for duration of work.
- .5 Revise Workplan as work progresses addressing new opportunities for diversion of waste from landfill.
- .6 Workplan to identify a Waste Management Coordinator. This individual will be the Contractor's representative responsible for supervising all waste management activities as well as coordinating related required submittals and reporting.

1.3 SUBMITTALS

- .1 Provide submittals, including the Waste Management Work Plan, in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit copies of certified receipts from authorized disposal sites and reuse and recycling facilities for material removed from site on a weekly basis.
 - .1 Written authorization from the Departmental Representative is required to deviate from haulers, facilities and receiving organizations listed in Waste Management Workplan.
 - .2 Include copy of weigh bills, scale tickets and disposal receipts for all waste disposed.

1.4 STORAGE, HANDLING AND PROTECTION

- .1 Store materials to be reused, recycled and salvaged in locations as directed by the Departmental Representative.
- .2 Unless specified otherwise, materials for removal become Contractor's property.
- .3 Handle, stockpile and protect material destined for removal off Site in accordance with Section 01 35 44 - Environmental protection procedures for marine works.

1.5 DISPOSAL REQUIREMENTS

- .1 Burying or burning of waste materials on site is prohibited.
- .2 Disposal of waste, volatile materials, mineral spirits, oil, paint, paint thinner or unused preservative material into waterways, storm, or sanitary sewers is prohibited.
- .3 Do not dispose of preservative treated wood through incineration.
- .4 Do not dispose of preservative treated wood with other materials destined for recycling or reuse.
- .5 Dispose of treated wood, end pieces, wood scraps and sawdust at a construction and demolition waste approved facility.
- .6 Dispose of waste only at approved waste processing facility or landfill sites approved by authority having jurisdiction.
- .7 Contact the authority having jurisdiction prior to commencement of work, to determine what, if any, demolition and construction waste materials have been banned from disposal in landfills and at transfer stations. Take appropriate action to isolate such

banned materials at site of work and dispose in strict accordance with provincial and municipal regulations.

- .8 Transport waste intended for landfill in separated condition, following rules and recommendations of Landfill Operator in support of their effort to divert, recycle and reduce amount of solid waste placed in landfill.
- .9 Sale of salvaged items is not permitted on site.
- .10 Remove materials from deconstruction as deconstruction/disassembly work progresses.

1.6 TIPPING FEES

- .1 All tipping fees are to be covered in the Stipulated Price provided. No additional payments will be made to cover waste disposal.

1.7 SCHEDULING

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

Part 2 PRODUCTS

2.1 NOT APPLICABLE

Part 3 EXECUTION

3.1 GENERALITIES

- .1 Dispose of all materials as required by regulatory codes, regulations, acts and municipal by-laws.
- .2 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes

3.2 CLEANING

- .1 Remove tools and waste materials on completion of Work and leave work area in clean and orderly condition.
- .2 Clean-up work area as work progresses.
- .3 Separate materials to be reused/recycled into specified sort areas.

3.3 DIVERSION OF MATERIALS

- .1 Separate materials from general waste stream and stockpile in separate piles or containers, as approved by the Departmental Representative, and consistent with applicable fire regulations.
 - .1 Mark containers or stockpile areas.
 - .2 Provide instruction on disposal practices.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE REQUIREMENTS

- .1 Procedure for acceptance of work
 - .1 Inspection carried out by the Contractor: The Contractor must inspect the work, identify defects and deficiencies and make the necessary repairs to ensure that everything complies with the requirements of the Contractual Documents.
 - .1 Notify the Departmental Representative in writing once the Contractor's inspection is complete, and submit a document attesting that the corrections have been made.
 - .2 Then submit a request for the work to be inspected by the Departmental Representative.
 - .2 Inspection performed by Departmental Representative.
 - .1 The Departmental Representative will carry out with the Contractor an inspection of the work in order to identify faults and failures.
 - .2 The Contractor must make the requested corrections.
 - .3 Completion of tasks: submit a written document certifying that the tasks indicated below have been carried out.
 - .1 The work is completed and it has been inspected and found to comply with the requirements of the Contract Documents.
 - .2 Defects and defects found during inspections have been corrected.
 - .3 Equipment, materials and systems have been tested and fully operational.
 - .4 The required certificates have been submitted.
 - .5 The necessary training in the operation of devices, materials and systems has been given to the Owner's personnel.
 - .6 Work is completed and ready to be submitted for final inspection.
 - .4 Final inspection.
 - .1 When all the aforementioned tasks are completed, submit a request for the work to be submitted to the final inspection, which will be carried out jointly by the Departmental Representative and the Contractor.
 - .2 If the work is deemed incomplete by the Departmental Representative, complete the items that were not performed and submit a new inspection request.
 - .5 Declaration of Substantial Completion: when the Departmental Representative considers that the deficiencies and defects have been corrected and that the contractual requirements seem largely satisfied, submit a request for the production of a certificate of substantial completion of the work.
 - .6 Beginning of the warranty period: the date of acceptance by the Departmental Representative of the declaration of substantial completion of the work submitted will be the date of the start of the warranty period.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

1.1 AS BUILT DRAWINGS

- .1 Departmental Representative will provide two (2) white print sets of contract drawings and two (2) copies of Specifications Manual specifically for "as-built" purposes.
- .2 Maintain at site one set of the contract drawings and specifications to record actual as-built site conditions.
- .3 Maintain up-to-date, real time as-built drawings and specifications in good condition and make available for inspection by the Departmental Representative upon request.
- .4 As-Built Drawings:
 - .1 Record changes in red ink on the prints. Mark only on one set of prints and at completion of work, neatly transfer notations to second set (also by use of red ink).
 - .2 Submit both sets to Departmental Representative prior to application for Certificate of Substantial Performance.
 - .3 Stamp all drawings with "As-Built Drawings". Label and place Contractor's signature and date.
 - .4 Show all modifications, substitutions and deviations from what is shown on the contract drawings or in specifications.
 - .5 Record following information:
 - .1 Horizontal and vertical location of exterior underground utilities and appurtenances referenced to permanent surface improvements.
 - .2 Horizontal and vertical location of various elements in relation to Geodetic Datum;
 - .3 Location of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure;
 - .4 Field changes of dimension and detail;
 - .5 Location of all capped or terminated services and utilities.
 - .6 Any details produced in the course of the contract by the Departmental Representative to supplement or to change existing design drawings;
 - .7 All change orders issued over the course of the contract must be documented on the finished as-built documents, accurately and consistently depicting the changed condition as it applies to all affected drawing details.
- .5 As-built Specifications: legibly mark in red each item to record actual construction, including:
 - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly items substituted from that specified.
 - .2 Changes made by Addenda and Change Orders.
 - .3 Mark up both copies of specifications; stamp "as-built", sign and date similarly to drawings as per above clause.
- .6 Maintain As-built documents current as the contract progresses. Departmental Representative will conduct reviews and inspections of the documents on a regular basis.

1.2 REVIEWED SHOP DRAWINGS

- .1 Provide a complete set of all shop drawings reviewed for project to incorporate into each copy of the Operations & Maintenance manuals.
- .2 Submit full sets at same time and as part of the contents of the Operation and Maintenance manuals specified.

1.3 OPERATION AND MAINTENANCE MANUAL

- .1 Definition: an organized compilation of operating and maintenance data including detailed technical information, documents and records describing operation and maintenance of individual products or systems as specified in individual sections of the specifications.
- .2 Number of copies required:
 - .1 Submit interim pdf digital copy and one (1) hard copy binder of the manual for review and inspection by Departmental Representative. Make revisions and additions as directed and resubmit.
 - .2 Upon review and acceptance by Departmental Representative, final pdf digital copy and one (1) hard copy binder. Interim copies are not to be considered as part of the final copies unless they have been fully revised and are identical to the final approved version.
- .3 Submission Date: submit complete operation and maintenance manual to Departmental Representative 3 weeks prior to application for Certificate of Substantial Performance of the work.
- .4 Binding:
 - .1 Assemble, coordinate, bind and index required data into Operation and Maintenance Manual.
 - .2 Use vinyl, hard covered, 3 "D" ring binders, loose leaf, sized for 215 x 280 mm paper, with spine pocket.
 - .3 Where multiple binders are needed, correlate data into related consistent groupings.
 - .4 Identify contents of each binder on spine.
 - .5 Organize and divide data following same numerical system as the section numbers of the Specification Manual.
 - .6 Dividers: separate each section by use of cardboard dividers and labels. Provide tabbed fly leaf for each individual product and system and give description of product or component.
 - .7 Type lists and notes. Do not hand write.
 - .8 Drawings, diagrams and manufacturers' literature must be legible. Provide with reinforced, punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- .5 Manual Contents:
 - .1 Cover sheet containing:
 - .1 Date submitted.

- .2 Project title, location and project number.
- .3 Names and addresses of Contractor, and all Sub-contractors.
- .2 Table of Contents: provide full table of contents in each binder(s), clearly indicate which contents are in each binder.
- .3 List of maintenance materials.
- .4 List of spare parts.
- .5 List of special tools.
- .6 Original or certified copy of warranties and product guarantees.
- .7 Copy of approval documents and certificates issued by Inspection Authorities.
- .8 Copy of reports and test results performed by Contractor as specified.
- .9 Product Information (PI Data) on materials, equipment and systems as specified in various sections of the specifications. Data to include:
 - .1 List of equipment including manufacturer's name, supplier, local source of supplies and service depot(s). Provide full addresses and telephone numbers.
 - .2 Nameplate information including equipment number, make, size, capacity, model number and serial number.
 - .3 Parts list.
 - .4 Installation details.
 - .5 Operating instructions.
 - .6 Maintenance instructions for equipment.
 - .7 Maintenance instructions for finishes.
- .6 Shop drawings:
 - .1 Include complete set of reviewed shop drawings into each copy of the operations and maintenance manual.
 - .2 Fold and bind material professionally in a manner that corresponds with the specification section numbering system.
 - .3 When large quantity of data is submitted, place into separate binders of same size as O&M binders.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Section 01 35 29.06 – Health and Safety.
- .3 Section 01 35 44 – Environmental protection procedures for marine works.
- .4 Section 01 74 19 – Construction/Demolition Waste Management and Disposal.

1.2 REFERENCE STANDARDS

- .1 CSA International
 - .1 CSA S350-M1980(R2003), Code of Practice for Safety in Demolition of Structures.
 - .2 Concrete Repair Institute (Icri) Technical Guideline 310.3r-2014 Guide For The Preparation Of Concrete Surfaces For Repair Using Hydrodemolition Methods
 - .3 ACI RAP-14: Field Guide to Concrete Repair Application Procedures - Concrete Removal Using Hydrodemolition.
- .2 National Research Council Canada (NRC)
 - .1 National Building Code of Canada 2015 (NBC).
 - .2 National Fire Code of Canada 2015 (NFC).
- .3 U.S. Environmental Protection Agency (EPA)/Office of Water
 - .1 EPA 832/R-92-005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 and 01 74 21.
- .2 Submit demolition drawings:
 - .1 Before demolition work starts, submit for review and approval by Department Representative shoring and underpinning drawings stamped and signed by professional engineer registered or licensed in Québec, Canada, showing proposed method.
 - .2 Construction Waste Management:
 - .1 Submit project Waste Management Plan highlighting recycling and salvage requirements.

1.4 SITE CONDITIONS

- .1 Review "Designated Substance Report" and take precautions to protect environment.
- .2 If material resembling spray or trowel-applied asbestos or other designated substance listed as hazardous be encountered, stop work, take preventative measures, and notify Department Representative immediately.

- .1 Proceed only after receipt of written instructions have been received from Department Representative.
- .3 Notify Department Representative before disrupting site access or services.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 EXAMINATION

- .1 Inspect site with Department Representative and verify extent and location of items designated for removal, disposal, alternative disposal, recycling, salvage and items to remain.
- .2 Locate and protect utilities. Preserve active utilities traversing site in operating condition.
- .3 Notify and obtain approval of utility companies before starting demolition.
- .4 Disconnect, cap, plug or divert, as required, existing public utilities within the property where they interfere with the execution of the work, in conformity with the requirements of the authorities having jurisdiction. Mark the location of these and previously capped or plugged services on the site and indicate location (horizontal and vertical) on the record drawings. Support, shore up and maintain pipes and conduits encountered.
 - .1 Immediately notify Department Representative and utility company concerned in case of damage to any utility or service, designated to remain in place.
 - .2 Immediately notify the Department Representative should uncharted utility or service be encountered, and await instruction in writing regarding remedial action.

3.2 PREPARATION

- .1 Temporary Erosion and Sedimentation Control:
 - .1 Inspect, repair, and maintain erosion and sedimentation control measures during demolition.
 - .2 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal after completion of demolition work.
- .2 Protection of In-Place Conditions:
 - .1 Prevent movement, settlement, or damage to adjacent structures to remain in place. Provide bracing and shoring required.
 - .2 Keep noise, dust, and inconvenience to occupants to minimum.
 - .3 Protect wharf systems, services and equipment.
 - .4 Provide temporary dust screens, covers, railings, supports and other protection as required.

- .5 Do Work in accordance with Section 01 35 29.06- Health and Safety.
- .3 Salvage
 - .1 Refer to requirements and demolition drawings to know what materials and materials to salvage for reuse.
 - .2 Remove items to be reused and store them as directed by the Departmental Representative and put them back in place in accordance with the requirements of the relevant section of the specifications.
- .4 Hydrodemolition works:
 - .1 The hydrodemolition method must comply with the international Concrete Repair Institute (ICRI) Technical Guideline 310.3r-2014 – Guide For The Preparation Of Concrete Surfaces For Repair Using Hydrodemolition Methods, and the ACI RAP-14 0 – Field Guide To Concrete Repair Application Procedures - Concrete Removal Using Hydrodemolition.
 - .2 Hydrodemolition must be used wherever indicated. The retrieval of residual water and the production of high noise levels are the main execution constraints.
 - .3 Hydrodemolition equipment must be chosen and handled in such a way as to respect the integrity of the concrete to be preserved.
 - .4 Vacuum equipment must have sufficient capacity to collect all debris from the water demolition operation.
 - .5 All collected wastewater must be treated in accordance with provincial and local water quality and discharge capacity requirements. The wastewater treatment equipment used must be able to adjust the pH, to lower the amount of suspended solids, and to lower the turbidity of the wastewater.
 - .6 Before starting the hydrodemolition, the equipment must be calibrated to obtain all the suitable coefficients.
 - .7 The execution of the removal of concrete by hydrodemolition includes but not limited to the following elements:
 - .1 Protect and / or relocate existing public services in the work area that could be damaged during hydrodemolition work. Provide temporary service until affected utilities are restored.
 - .2 Put on temporary protection and other safety measures before starting water demolition. The contractor must adequately protect the work area to prevent debris resulting from the water demolition operation from moving beyond the limits of the work area to protect the public from flying debris.
 - .3 Remove concrete in areas designated on drawings using hydrodemolition to the depth specified on drawings. Maintain the quality and depth of cut demonstrated in the test area throughout the project. If there are delaminations beyond the minimum demolition depth, the demolition must continue to the maximum allowable depth.
 - .4 Areas that are inaccessible for hydrodemolition must be removed using portable high pressure water spraying tools or pneumatic tools.
 - .5 Clean the area to remove all debris and other materials that must be removed during hydrodemolition. Thoroughly clean the demolished area using a water gun held no more than 12 inches from the surface. The

surface should be vacuumed immediately after high pressure water cleaning to remove debris or water. After cleaning, the surface should be free of all debris, loose materials, mud and any other material that could interfere with the adhesion of the new concrete coating leaving a surface ready to pour.

- .6 Areas where pneumatic tools have been used must be thoroughly cleaned.
- .7 Avoid damaging the existing reinforcement which must be conserved during the removal of the concrete. Any reinforcement damaged by these operations will be repaired or replaced at no cost to the Departmental Representative.
- .8 All water used for hydrodemolition operations must be potable water. The Departmental Representative shall designate the location from which the contractor must obtain drinking water. The contractor is responsible for providing all materials, equipment and tools necessary to tap into the water source. The contractor must set up a meter to measure water consumption.
- .9 All debris must be removed quickly to prevent concrete debris from adhering to the water-demolished surface. Solid debris should be collected using vacuum equipment. The water collected during the hydrodemolition operation must be directed to a wastewater collection system. Solid debris must be properly disposed of along with other concrete debris.
- .10 Containment of wastewater is the sole responsibility of the contractor. At no time should water be able to flow freely into the waters of the Gulf of St. Lawrence.
- .11 The contractor must obtain all the permits required for the evacuation of wastewater. The contractor shall establish and maintain any testing program required by the local government authority for the disposal of wastewater.

.5 Demolition/Removal:

- .1 Demolish structural parts as indicated.
- .2 Remove items and structures indicated.
- .3 Cut the edges of the partially demolished components of the wharf according to the tolerances specified by the Departmental Representative in order to facilitate the installation of the new elements.
- .4 At the end of each working day, ensure that the work is safe and stable.
- .5 Protect at all times against the exterior elements the interior surfaces of the parts that will not be demolished.
- .6 Carry out demolition work in such a way as to raise as little dust as possible. Keep materials wet as directed by the Departmental Representative.
- .7 Remove equipment and devices as indicated on the drawings, store them, protect them, then have them reinstalled if necessary by competent workers.
- .8 Check existing conditions and coordinate with the indicated requirements to establish area of structure to be demolished.

- .9 The contractor is required to communicate to the Departmental Representative any anomaly and / or discrepancy between the drawings and the existing structure during its demolition.
- .10 If certain details shown on the drawings cannot be adapted due to certain site conditions, the contractor must notify the Departmental Representative for the study of new details.
- .11 Dismantle the parts of the existing structure whose removal is necessary to allow the construction of the new structure.
- .12 Remove items to be reused, store them according to instructions and put reinstall them in place in accordance with the instructions indicated on the drawings.
- .13 The contractor must direct the operations by obstructing the streets, passages and navigation as little as possible, but at no time the accesses and the activities of the ferry. Contractor must comply with the directives received in this regard from the Departmental Representative.
- .14 During the execution of the work, install - in accordance with laws, codes, regulations and directives issued by the Departmental Representative - fences, security shelters, guardrails, rails, lighting, warning signs required, etc. to protect the workforce, the public and the consultant against material loss or damage, personal injury and loss of life.
- .15 The contractor must take strict measures to ensure that no material, product, debris or other object causes damage to the environment and to others and in this regard hold the owner harmless from any legal action, loss or damage claims. and resulting from its default.
- .16 Do not dump waste or volatile materials, eg mineral spirits, oils, petroleum-based lubricants or toxic cleaning solutions, into waterways or into storm or sanitary sewers. Ensure that the appropriate methods of disposal of this type of waste are observed throughout the work.
- .17 The contractor is responsible for ensuring site safety at all times, including outside working hours.
- .18 Carry out the demolition shown on the plans.
- .19 Delimit the area to be demolished in the concrete works by saw cuts. The saw kerf must not exceed the concrete cover when the reinforcement is to be conserved.
- .20 For concrete structures to be demolished, if concrete or mortar is to be poured against a sawn concrete surface, the surface must be bush hammered or passed with a strong wet sandblast before coating it with a binding agent or pour the new concrete.
- .21 The contractor is required to notify the owner of any defect or deterioration in the existing structures to be kept during the demolition work.
- .22 Where demolition work is to be carried out near existing structures, the contractor must take the necessary precautions not to disturb or damage in any way these structures.
- .23 The contractor is responsible for any breakage and must repair at his expense.
- .24 In areas affected by demolition work, the contractor assumes all responsibility for protection against dust, demolition dangers and others.

- .25 Demolition materials become the property of the contractor and must be removed from site daily.
- .26 Undertake the demolition of the structures in the conditions they are at the time of the site inspection before the submission of the tender.
- .27 If the competent authorities or the Departmental Representative so require, submit for verification, drawings, diagrams and details indicating the sequence of dismantling of the works or the shoring pieces.
- .28 The drawings of the support elements must bear the seal of a competent engineer recognized in the province of Quebec.
- .29 Take all necessary measures to prevent any displacement or collapse of parts of the structure to be preserved and to prevent them from being damaged. Supply and install the necessary parts for reinforcement and shoring. Perform underpinning work as needed. Repair damaged structures and assume responsibility for injuries that may result from demolition work.
- .30 Unless otherwise indicated, clear the site of demolition debris in accordance with the requirements of the competent authorities.
- .31 Consider that the existing infrastructures were not designed to withstand significant loads. Adapt work methods and use appropriate equipment, taking into account the capacity and condition of existing structures. Take all necessary measures to avoid damaging them. Set up temporary supports, if necessary.
- .32 The plans used for the construction of existing works are included in the tender documents, for information purposes, in the form of computer files. It is the responsibility of the contractor to make the assessment of the premises and the additional surveys, and to ensure the capacity of the existing works on which he intends to circulate with machinery, store materials, or otherwise request.

3.3 WORKSITE REINSTATEMENT AND REPAIR

- .1 General: Immediately repair damage caused to adjacent construction by demolition operations.
- .2 Level existing surfaces to be repaired to prepare them for new material

3.4 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11- Cleaning.
 - .1 Leave the work area clean and free of all waste at the end of each working day and when required to allow port operations.
 - .2 Provide the site with waste containers and bins in sufficient quantities to effectively ensure the cleanliness of the premises.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11- Cleaning.
- .3 Refer to demolition drawings and specifications for items to be salvaged for reuse.
- .4 Waste Management: separate waste materials for reuse in accordance with Section 01 74 21- Construction/Demolition Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

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END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 33 00 – Submittal Procedures
- .2 Section 03 20 00 – Concrete Reinforcing.
- .3 Section 03 30 00 – Cast in Place Concrete.
- .4 Section 03 37 26 – Underwater Placed Concrete.

1.2 REFERENCE STANDARDS

- .1 Cahier des charges et devis généraux du Québec (CCDG), Infrastructures routières – Construction et réparation
 - .1 CCDG, Chapitre 15.4 – Ouvrages en béton.
 - .2 Tome VII, Norme 3101 du MTMDET.
- .2 Canadian Standards Association (CSA International)
 - .1 CSA-A23.1-1/A23.2-14, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
 - .2 CSA-A23.1-14, Design of concrete structures.
 - .3 CAN/CSA-O86:19, Engineering Design in Wood (Limit States Design).
 - .4 CSA O121-M1978(R2003), Douglas Fir Plywood.
 - .5 CSA O151-04, Canadian Softwood Plywood.
 - .6 CSA O153-M1980(R2003), Poplar Plywood.
 - .7 CSA O437 Series-93(R2006), Standards for OSB and Waferboard.
 - .8 CSA S269.1-16 (R2021), Falsework for Construction Purposes.
 - .9 CAN/CSA-S269.3-M92(R2003), Concrete Formwork, National Standard of Canada.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit shop drawings for formwork and falsework.
 - .1 Drawings shall be stamped and signed by professional engineer licensed in Québec.
- .3 Shop drawings must Indicate, show, or include the method and schedule of construction, shoring, stripping and re-shoring procedures, materials, arrangement of joints, ties, and locations of temporary embedded parts. Comply with CSA S269.1, for falsework drawings and with CAN/CSA-S269.3 for formwork drawings.
- .4 Shop drawings must Indicate, show, or include formwork design data: permissible rate of concrete placement, and permissible temperature of concrete, in forms.
- .5 Indicate sequence of erection and removal of formwork/falsework as directed by Departmental Representative.

- .6 Submit WHMIS documents.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Store and manage hazardous materials in accordance with regulations.
- .2 Waste Management and Disposal:
 - .1 Separate waste materials for their reuse and recycling in accordance with Section 01 47 21 Construction/Demolition Waste Management and Disposal.
 - .2 Place materials defined as hazardous or toxic in designated containers.
 - .3 Divert wood materials from landfill to a recycling/reuse facility as approved by Departmental Representative.
 - .4 Divert unused form release material from landfill to an official hazardous material collections site as approved by the Departmental Representative.

1.5 RESPONSIBILITY OF THE CONTRACTOR

- .1 Contractor to assume responsibility for formwork and temporary shoring works. The review of the formwork and temporary works drawings by the Departmental Representative does not release the Contractor from his responsibility for the supply of works perfectly in accordance with the drawings and specifications.
- .2 Contractor to ensure their familiarity and compliance with all the laws and regulations applicable to the design and construction of formwork and temporary structures. Observe, among other things, the Quebec Code S-2.1, r.6 regarding the shoring of concrete formwork.
- .3 Before using the formwork and temporary structures, submit to the Departmental Representative a declaration signed and sealed by an engineer in good standing of the Ordre des Ingénieurs du Québec, attesting that the formwork and temporary structures conform to the plans signed and sealed and that they can be used for the purposes for which they are intended.

Part 2 Products

2.1 MATERIALS

- .1 Formwork materials:
 - .1 Use wood and wood product formwork materials to reference standards.
 - .2 For concrete with special architectural features, use formwork materials to CSA-A23.1/A23.2.
- .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. Repair any marks with a non-shrink cement grout of the same color as concrete. Grout must be approved by the Departmental Representative.
- .3 Form release agent: Exclusive material, non-volatile that will not stain concrete or interfere with the subsequent application of finishing coatings or plasters to the concrete

surface, derived from agricultural sources, without hydrocarbons, biodegradable, non-toxic, low VOC.

- .4 Form stripping agent: colourless mineral oil, low VOC, biodegradable, non-toxic, 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 centres before proceeding with formwork/falsework and ensure dimensions agree with drawings.
- .2 Obtain Departmental Representative's approval 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/A23.2.
- .6 Align form joints and make watertight.
 - .1 Keep form joints to minimum.
- .7 Use 25mm 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 according to the state-of art for such activities.
- .9 Construct forms for architectural concrete, and place ties as directed as indicated.
 - .1 Joint pattern not necessarily based on using standard size panels or maximum permissible spacing of ties.
- .10 Build in anchors, sleeves, and other inserts required to accommodate Work specified in other sections.
 - .1 Ensure that anchors and inserts will not protrude beyond surfaces designated to receive applied finishes, including painting.
- .11 Install a lining on the interior side of the forms for the surfaces below.
 - .1 The vertical edges of the support bases of the new walkway;
 - .2 Exposed faces of the piles extension blocks, bollard bases, fender bases, concrete repairs and the new turning dolphin. Do not stagger the seams of the liner panels. Align the joints to obtain uniform patterns;
 - .3 The underside of the piles extension blocks, the deck of the new turning dolphin, and fender bases and concrete repairs.

- .4 Fix the liner on the formwork by stretching it as much as possible to prevent the formation of folds.
- .5 Extend the lining on the edges of the formwork panels.
- .6 Make sure that the liner is new and that it has not been used before.
- .7 Ensure that the liner is dry and free of oil when placing concrete.
- .8 It is forbidden to apply a form release agent when a drain liner is used.
- .9 If the concrete surfaces must be cleaned after the removal of the formwork, use a simple jet of pressurized water so as not to alter the smooth finish of the concrete.
- .10 The cost of a textile liner is included in the price of the concrete for the corresponding part of the work.
- .12 Clean formwork in accordance with CSA-A23.1/A23.2, before placing concrete.

3.2 ANCHORS, SLEEVES AND RECESSED PARTS

- .1 Provide and install in the formwork, in accordance with section 6.7 of the CSA-A23.1 / A23.2 standard, the sleeves, fasteners, anchor plates or other embedded parts required on the drawings and in the specifications. The work must comply with section 03 25 00.
- .2 Provide and install in the formwork, in accordance with section 6.7 of the CSA-A23.1 / A23.2 standard, the anchor bolts for the mooring bollards, for the supports of the walkway, as shown and detailed on the drawings.
- .3 In all cases, respect the installation tolerances specified in article 6.7.3 of the CSA A23.1 / A23.2 standard.

3.3 REMOVAL AND RESHORING

- .1 Leave formwork in place for following minimum periods of time after placing concrete.
 - .1 Three (3) days for the bases of the bollards, the sides of the piles extension blocks, and the sides of the concrete repairs of the fenders bases.
 - .2 Seven (7) days for all other methods.
 - .3 Fourteen (14) days for the underside of the piles extension blocks, the new dolphin's deck and the other framing members, or 5 days if the forms are replaced immediately by an appropriate shoring meeting the prescribed requirements for the temporary shoring works.
- .2 The period of time indicated does not release the contractor from its responsibility to take into account the complexity and the kind of work and weather conditions, and to check if the concrete has reached sufficient strength to support its own weight and other imposed loads prior to form removal.
- .3 Remove formwork when concrete has reached 70% of its design strength after 28 days or after the minimum period noted above, whichever comes prior, and immediately place the appropriate reshoring.
- .4 Provide necessary reshoring of members where early removal of forms may be required or where members may be subjected to additional loads during construction as required.
- .5 Re-use formwork and falsework subject to requirements of CSA-A23.1/A23.2.

3.4 FILLING THE FORM TIE HOLES

- .1 Fill all conical cavities left after removing the plastic cones from the ends of the form ties with a hydraulic mortar reinforced with modified polymers. Moisten beforehand as requested by the manufacturer. After placing the mortar, smooth the surface so that it merges with the surrounding concrete surfaces. Ensure ripening.
- .2 In the case of an exposed surface, check with the Departmental Representative on the need to fill the conical cavities. Have the fillers used approved by the Departmental Representative. The products used must be of the same texture and color as the concrete used.

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 10 00 – Concrete Forming and Accessories.
- .5 Section 03 30 00 – Cast-in-Place Concrete.
- .6 Section 03 37 26 – Underwater Placed Concrete.

1.2 REFERENCE STANDARDS

- .1 Cahier des Charges et Devis Généraux du Québec (CCDG), Infrastructures routières – Construction et réparation
 - .1 CCDG, chapter 15.4 – Ouvrages en béton.
 - .2 CCDG, chapter 15.14 – Galvanisation, métallisation et peinture.
 - .3 Tome VII, standard 5101 du MTMDET.
- .2 ASTM International
 - .1 ASTM A1064 / A1064M - 18a , Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
 - .2 ASTM A143/A143M-07 (2020), Standard Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement.
 - .3 ASTM A775/A775M-19, Standard Specification for Epoxy-Coated Reinforcing Steel Bars.
 - .4 ASTM A307-21, Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength
 - .5 ASTM F3125/F3125M-19e2, Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength
 - .6 ASTM C 881/C881M-20a, Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete.
- .3 CSA International
 - .1 CSA-A23.1-19/A23.2-19, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.
 - .2 CAN/CSA – S6-19, Bridges Canadian Code.
 - .3 CAN/CSA-A23.3-19, Design of Concrete Structures.
 - .4 CSA-G30.18-09 (R2019), Carbon Steel Bars for Concrete Reinforcement.

- .5 CSA-G40.20/G40.21-13 (R2018), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
- .6 CAN/CSA-G164-18, Hot Dip Galvanizing of Irregularly Shaped Articles.
- .7 CSA W186-21, Welding of Reinforcing Bars in Reinforced Concrete Construction.
- .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 Technical sheets:
 - .1 Submit the required technical data sheets as well as the manufacturer's instructions and documentation concerning the materials used for the cast-in-place concrete and the admixtures. Indicate product characteristics, performance criteria, dimensions, finish and limits.
 - .2 Submit two (2) copies of material safety data sheets required under WHMIS, in accordance with section 01 35 29.06 – Health and safety.
- .3 Shop Drawings:
 - .1 Submit drawings stamped and signed by competent professional engineer licensed in Quebec.
 - .1 Prepare reinforcement drawings in accordance with RSIC Manual of Standard Practice.
 - .2 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-S6-19 unless otherwise indicated.

1.4 QUALITY ASSURANCE

- .1 Submit in accordance with Section 01 45 00 - Quality Control.
 - .1 Mill test report: at least four (4) weeks before the reinforcement is placed, submit to the Departmental Representative a certified copy of the steel reinforcement test report that was carried out in the factory, stating the physical and chemical characteristics of steel.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions and Section 01 61 00 – Common Product Requirements.
- .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 in clean, dry, well-ventilated area.
 - .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 400 W, deformed bars to CSA-G30.18, unless indicated otherwise.
- .3 Cold-drawn annealed steel wire ties: to ASTM A1064 / A1064M.
- .4 Chairs, bolsters, bar supports, spacers: to CSA-A23.1/A23.2.
- .5 Mechanical splices: subject to approval of Departmental Representative.
- .6 Plain round bars: to CSA-G40.20/G40.21.

2.2 FABRICATION

- .1 Fabricate reinforcing steel in accordance with CSA-A23.1/A23.2 Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Canada, unless indicated otherwise.
- .2 Obtain Departmental Representative's written approval for locations of reinforcement splices other than those shown on placing drawings.
- .3 As soon as they are approved by the Departmental Representative, the reinforcements must be welded in accordance with CSA W186.
- .4 Ship bundles of bar reinforcement clearly identified in accordance with bar bending details and lists.

2.3 SOURCE QUALITY CONTROL

- .1 Upon request, provide Departmental Representative with certified copy of mill test report of reinforcing steel, showing physical and chemical analysis, minimum Four (4) weeks prior to beginning reinforcing work.
- .2 Upon request inform Departmental Representative 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 in accordance with CSA-A23.1/A23.2.
- .2 At control joints, cover portion of dowel intended to move within hardened concrete with thermoplastic cover.
- .3 Prior to placing concrete, obtain Departmental Representative's approval of reinforcing material and placement.
- .4 Protect coated portions of bars with covering during pouring.

3.3 LAP SPLICES

- .1 Lap splice reinforcements as indicated on typical drawings and details.
- .2 The lap splice lengths and the extension lengths of the bars beyond the critical points must be in accordance with the CSA-A23.3 standard. Unless otherwise indicated on the drawings, all lap splices will be Class "B" (1.3 Lc), as per Table 17b Tension Lap Splice for Top Reinforcement of the Reinforcing Steel Institute Recommended Standards Manual from Canada.
- .3 Obtain Departmental Representative approval for locations of reinforcement lap splices other than those shown on the plans.

3.4 WELDING

- .1 Unless authorized in writing by Departmental Representative, do not weld reinforcing steel.
- .2 When authorized by the Departmental Representative, perform the reinforcement welding work in accordance with section 6.6.10 of the CSA-A23.1 / A23.2 standard and the requirements of the CSA W186 standard. When a weld is performed, the use of weldable category (W) bars is mandatory.
- .3 All welding work must be entrusted to a company accredited by the Canadian Welding Bureau and must be carried out in accordance with the prescriptions of the latest edition of the CSA W186 standard. Prior to works, submit to the Departmental Representative, for review, all the details of the welds that will be carried out. In this case, the reinforcing steel to be welded must comply with the requirements of the latest edition of CSA G30.16. Preheat all reinforcing steel as required in these standards.

3.5 REINFORCEMENTS COVER

- .1 Unless otherwise indicated on the plans, the reinforcing bars must be installed at the following exact distances from the concrete face:
 - .1 Concrete exposed to chlorides (exposure classes C-1, C-XL, C-3 and C-4): Cover = 75 mm

3.6 CLEANING

- .1 For the placement of concrete to occur, the surface condition of the reinforcing bars must comply with section 6.1.5 of the CSA-A23.1 / A23.2 standard.
- .2 If necessary, clean the reinforcements immediately before placing the concrete.

END OF SECTION

Part 1 General

1.1 SUMMARY

- .1 This section covers work requirements for cast-in-place concrete associated with the wharf upgrades and the new turning dolphin at Cap-Aux-Meules Wharf.

1.2 RELATED REQUIREMENTS

- .1 Section 01 29 00 – Payment Procedures.
- .2 Section 01 29 83 – Testing Laboratory Services.
- .3 Section 01 33 00 – Submittal Procedures.
- .4 Section 01 35 44 – Environmental Protection Procedures for Marine Works.
- .5 Section 01 45 00 – Quality Control.
- .6 Section 03 10 00 – Concrete Forming and Accessories.
- .7 Section 03 20 00 – Concrete Reinforcing.
- .8 Section 03 37 26 – Underwater Placed Concrete.

1.3 REFERENCE STANDARDS

- .1 Cahier des Charges et Devis Généraux du Québec (CCDG), Infrastructures routières – Construction et réparation
 - .1 CCDG, chapter 15.4 – Ouvrages en béton.
 - .2 Tome VII, Norme 3101 du MTMDET.
- .2 ASTM International
 - .1 ASTM C260/C260M-10a (2016), Standard Specification for Air-Entraining Admixtures for Concrete.
 - .2 ASTM C309-19, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
 - .3 ASTM C494/C494M-19, Standard Specification for Chemical Admixtures for Concrete.
 - .4 ASTM C 881/C881M-20a, Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete.
 - .5 ASTM C1017/C1017M-13e1, Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.
 - .6 ASTM C C1059/C1059M-13, Standard Specification for Latex Agents for Bonding Fresh To Hardened Concrete.
 - .7 ASTM D412-16, Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension.
 - .8 ASTM D624-00 (2020), Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomer.

- .9 ASTM D1751-18, Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
- .10 ASTM D1752-18, Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction.
- .3 CSA International
 - .1 CSA A23.1/A23.2-19, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
 - .2 CSA A283-19, Qualification Code for Concrete Testing Laboratories.
 - .3 CSA A3000-18, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005),

1.4 ABBREVIATIONS AND ACRONYMS

- .1 Portland Cement: hydraulic cement, blended hydraulic cement (XXb - b denotes blended) and Portland-limestone cement types:
 - .1 GU, GUb and GUL - General use cement.
 - .2 MS and MSb - Moderate sulphate-resistant cement.
 - .3 MH, MHb and MHL - Moderate heat of hydration cement.
 - .4 HE, HEb and HEL - High early-strength cement.
 - .5 LH, LHb and LHL - Low heat of hydration cement.
 - .6 HS and HSb - High sulphate-resistant cement.
- .2 Fly ash types:
 - .1 F - with CaO content maximum 8%.
 - .2 CI - with CaO content 15 to 20%.
 - .3 CH - with CaO minimum 20%.
- .3 GGBFS - Ground, granulated blast-furnace slag.

1.5 ADMINISTRATIVE REQUIREMENTS

- .1 Meeting prior to the implementation: a week before the start of concrete work, hold a meeting for concrete work.
 - .1 Ensure that the Superintendent, the Departmental Representative and the personnel responsible for the production and finishing of concrete, as well as representatives of test laboratories are present.
 - .2 Check the requirements of works.

1.6 DOCUMENTS/SAMPLES TO SUBMIT FOR APPROVAL/INFORMATION

- .1 Submit documents and samples required in accordance with section 01 33 00 - Submittal Procedures.
- .2 Product Data:

- .1 Submit manufacturer's instructions, printed product literature and data sheets for proprietary materials used in Cast-In-Place Concrete and additives and include product characteristics, performance criteria, physical size, finish and limitations.
- .2 Submit 2 copies of WHMIS SDS in accordance with section 01 33 00 - Submittal Procedures.
- .3 Site Quality Control Submittals:
 - .1 Concrete pours: provide accurate records of poured concrete items indicating date and location of pour, quality, air temperature and test samples taken.

1.7 QUALITY ASSURANCE

- .1 Quality Assurance: in accordance with Section 01 45 00 - Quality Control.
- .2 Provide Departmental Representative, minimum 4 weeks prior to starting concrete work, with valid and recognized certificate from plant delivering concrete.
 - .1 Provide test data and certification by qualified independent inspection and testing laboratory that materials and mix designs used in concrete mixture will meet specified requirements.
 - .2 Submit a test report carried out by a recognized laboratory, which certify that the aggregates used in the manufacture of concrete is not likely to cause a growth exceeding the values shown in table 1 of method standard CAN/CSA standard - A23.2-27A – Standard Practice to Identify degree of Alkali-reactivity of aggregates.
- .3 Minimum 4 weeks prior to starting concrete work, provide proposed quality control procedures for review by Departmental Representative on following items:
 - .1 Falsework erection.
 - .2 Hot weather concrete.
 - .3 Cold weather concrete.
 - .4 Curing.
 - .5 Finishes.
 - .6 Formwork removal.
 - .7 Joints.
 - .8 At least 4 weeks prior to beginning Work, inform Departmental Representative of source of fly ash.
 - .1 Changing source of fly ash without written approval of Departmental Representative is prohibited.
- .4 Environment: Ensure environmental aspects in accordance with Section 01 35 43 - Environmental Procedures.

1.8 SITE CONDITIONS

- .1 Placing concrete during rain or weather events that could damage concrete is prohibited.
- .2 Protect newly placed concrete from rain or weather events in accordance with CSA A23.1/A23.2.
- .3 Cold weather protection:

- .1 Maintain protection equipment, in readiness on Site.
- .2 Use such equipment when ambient temperature below 5°C, or when temperature may fall below 5°C before concrete cured.
- .3 Placing concrete upon or against surface at temperature below 5°C is prohibited.
- .4 Hot weather protection:
 - .1 Protect concrete from direct sunlight when ambient temperature above 27°C.
 - .2 Prevent forms of getting too hot before concrete placed. Apply accepted methods of cooling not to affect concrete adversely.
- .5 Protect from drying.

1.9 DELIVERY, STORAGE AND HANDLING

- .1 Delivery and Acceptance Requirements:
 - .1 Concrete hauling time: deliver to site of Work and discharged within 120 minutes maximum after batching.
 - .1 Do not modify maximum time limit without receipt of prior written agreement from Departmental Representative, Laboratory Representative and concrete producer as described in CSA A23.1/A23.2.
 - .2 Deviations to be submitted for review by Departmental Representative.
 - .2 Concrete delivery: ensure continuous concrete delivery from plant meets CSA A23.1/A23.2.
 - .3 Concrete pouring: Ensure that concrete plant is able to provide a continuous supply according to CSA A23.1/A23.2.
- .2 Management and waste disposal
 - .1 Sort the waste for re-use / re-use and recycling.
 - .2 Transport concrete and the unused components of concrete to an authorised recycling facility.
 - .3 Provide, on the site or elsewhere, adequate space for the washing of concrete trucks safely.
 - .4 Deliver additives (pigments, fibers, etc.) unused to an authorized hazardous materials collection authorized site.
 - .5 It is forbidden to dump unused adjuvants in the sewers, in the river, in the sea, on the floor or anywhere else where this could present a risk to health or the environment.
 - .6 Take steps to avoid that adjuvants used in the composition of the concrete contaminate water courses and sources of drinking water. As appropriate, to collect these liquid waste or solidify them with a non combustible inert material, taking all appropriate security measures. Eliminate waste in accordance with local, provincial/territorial and applicable national regulations and requirements according to Section 01 74 21 - Waste Management and Disposal.

Part 2 Products

2.1 MATERIALS

- .1 Concrete:
 - .1 Concrete Type V-S as defined in Table 3101-2 of MTMDET 3101 Standard.
 - .2 Hydraulic Cement: Type GUB-F/SF as per MTMDET 3101 Standard.
 - .3 Supplementary cementing materials: maximum ratio as required by MTMDET 3101 Standard. Fly ashes will be of Type F as per CAN/CSA A3001.
 - .4 Water, aggregates and admixtures: to MTMDET 3101 standards or CSA A23.1/A23.2 standards.
 - .5 Admixtures:
 - .1 Air entraining admixture: to ASTM C260.
 - .2 Chemical admixture: to ASTM C1017 and ASTM C494. Departmental Representative to approve accelerating or set retarding admixtures during cold and hot weather placing.
 - .3 Shrinkage-reducing admixture (SRA): to ASTM WK23938
 - .6 Curing compound: to CSA A23.1/A23.2 and ASTM C309.
- .2 Non-shrink grout: premixed compound consisting of non-metallic aggregate, Portland cement, water reducing and plasticizing agents to CSA A23.1/A23.2.
 - .1 Compressive strength at 28 days: 50 MPa.
 - .2 Volume change at 14 days of +0.01% to +0.03% when tested to ASTM C1090.
 - .3 Grout shall be qualified as non-shrink grout.
- .3 Non-Shrink Concrete:
 - .1 Volume change at 35 days of maximum 0.04% when tested to CSA A23.2-21C
- .4 Epoxy adhesives for anchors and dowels:
 - .1 Epoxy resin based adhesive: high strength epoxy to ASTM C881 / C881M, type IV, grade 3. Epoxy adhesive must be a two component injectable hybrid adhesive. The two components must be separated by means of a double cylinder aluminum packaging attached to a manifold which keeps component A and component B separate. The containers should be designed to accept a static mixing nozzle which perfectly mixes component A and component B and allows injection of the mixed adhesive directly into the drilled hole. Only injection tools and static mixing nozzles supplied by the manufacturer may be used. The injection adhesive should be formulated to include resin and hardener to provide optimum cure speed, high strength and stiffness. The technical data of the Injection Adhesive Anchor System should be submitted to the Departmental Representative for review and approval, prior to installation.
 - .2 In addition to the above, the proposed product needs to conform to the following:
 - .1 Be acceptable for use in a marine environment.
 - .2 Be suitable for installation in cold weather, and perform well in cold-weather (freeze/thaw) conditions.
 - .3 Have longer working time, to allow for some flexibility during installation.

- .5 Anchor bolts: as per supplier specifications.
- .6 Sealing elastomer for slab joints: elastomer product made from polyurethane, several components, resistant to climatic and environmental conditions (rain, snow, temperature range of + 40 C to -40 C).
- .7 Weep hole tubes: PVC.

2.2 MIXES

- .1 Performance Method for specifying concrete: to meet Departmental Representative performance criteria to CSA A23.1/A23.2.
 - .1 Ensure concrete supplier meets performance criteria as established below and provide verification of compliance as in Quality Control Plan.
 - .2 Provide concrete mix to meet following requirements:
 - .1 Concrete Type: V-S to MTMDET 3101 standard.
 - .2 W/CM within the following range: 0.38 to 0.42.
 - .3 Compressive strength at 28 Days: 35 MPa minimum.
 - .4 Intended application: Piles extension blocks, new dolphin deck.
 - .5 Aggregate size: 5-20mm maximum.
 - .6 Rapid chloride permeability: less than 1000 coulombs.
 - .7 Air content: 6 to 9%.
 - .8 Slump (mm) : 130±30
 - .3 Provide concrete mix to meet following requirements:
 - .1 Concrete Type: XV (anti-washout) to MTMDET 3101 standard.
 - .2 W/CM Maximum: 0.42.
 - .3 Compressive strength at 28 Days: 35 MPa minimum.
 - .4 Intended application: Pile filling.
 - .5 Aggregate size: 2.5-10mm maximum.
 - .6 Rapid chloride permeability: less than 1500 coulombs.
 - .7 Air content category: 6 to 9%.
 - .8 Slump (mm) : 200±40
 - .9 Maximum air bubble network: 230 (µm).
 - .10 Concrete shall be Non-shrink. See clause 2.1.3 for acceptance criteria.
 - .4 Provide concrete mix to meet following requirements:
 - .1 Concrete Type: XIV-R to MTMDET 3101 standard.
 - .2 W/CM within the following range: 0.35 to 0.40.
 - .3 Compressive strength at 28 Days: 35 MPa minimum.
 - .4 Intended application: bollard bases and concrete repairs.
 - .5 Aggregate size: 2.5-10mm maximum.
 - .6 Rapid chloride permeability: less than 1000 coulombs.
 - .7 Air content: 6 to 9%.
 - .8 Table flow test (mm) : 675±50

- .9 Maximum air bubble network: 300 (µm).
- .2 Provide quality management plan to ensure verification of concrete quality to specified performance.
- .3 Concrete supplier's certification: both batch plant and materials meet MTMDet or CSA A23.1 requirements.
- .4 Ensure that aggregate sources conform to the requirements of Clause 4.2.3.5, "Deleterious Reactions" of CSA A23.1/A23.2 and that performance certification includes certification that the aggregate is non-reactive.

Part 3 Execution

3.1 PREPARATION

- .1 Obtain Departmental Representative's written approval before placing concrete.
 - .1 Provide 24 hours minimum notice prior to placing of concrete.
- .2 Place concrete reinforcing in accordance with Section 03 20 00 - Concrete Reinforcing.
- .3 During concreting operations:
 - .1 Development of cold joints not allowed.
 - .2 Ensure concrete delivery and handling facilitate placing with minimum of re-handling, and without damage to existing structure or Work.
 - .3 Provide a second pump on construction site in case of pump breakage.
 - .4 It is never allowed to add water during transportation to the site. It is also never allowed to add water to the concrete before dumping to the truck-mixer, unless the Department's representative has given permission. If necessary, the amount of water added must be listed on the delivery note and certified by the departmental representative who signs the statement.
- .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 in adverse weather.
- .7 Protect previous Work from staining.
- .8 Clean and remove stains prior to application for concrete finishes.
- .9 Maintain accurate records of poured concrete items to indicate date, location of pour, quality, workability, air content, temperature and test samples taken.
- .10 In locations where new concrete is doweled to existing structure, bush the surface to a minimum depth of 10 mm and drill holes as required for dowelling.
 - .1 Place steel dowels of deformed steel reinforcing bars and pack solidly with non-shrink grout to anchor and hold dowels in positions as indicated.
- .11 Do not place load upon new concrete until authorized by Departmental Representative.

3.2 INSTALLATION/APPLICATION

- .1 The contractor must take into account that the schedule will involve work during the winter. He will have to provide for the construction of heated shelters to protect the new concrete elements. For sectors where the installation of shelters is not possible due to elements located in the marine environment, the contractor must carry out this work during a period during which the freeze risks for the grout or concrete are non-existent. All these measures must be included in the unit price of the various payment items.
- .2 Do cast-in-place concrete work to CSA A23.1/A23.2 and Section 15.4 of CCDG.
- .3 Dowelled interfaces: as per drawings.
- .4 Sleeves and inserts:
 - .1 Do not permit penetrations, sleeves, ducts, pipes or other openings to pass through joists, beams, column capitals or columns, 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.
 - .3 Sleeves and openings greater than 100 x 100 mm not indicated, must be reviewed by Departmental Representative.
 - .4 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.
 - .5 Confirm locations and sizes of sleeves and openings shown on drawings.
 - .6 Set special inserts for strength testing as indicated and as required by non-destructive method of testing concrete.
- .5 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 written approval from Departmental Representative.
 - .1 The diameter of the holes drilled after the concrete has set must comply with the manufacturer's recommendations.
 - .3 Protect anchor bolt holes from water accumulations, snow and ice build-ups.
 - .4 Set bolts and fill holes with non-shrink grout.
 - .5 Locate anchor bolts used in connection with expansion shoes, rollers and rockers with due regard to ambient temperature at time of erection.
- .6 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 used, remove them after concrete has set.
 - .2 Install weep hole tubes and drains as indicated.
- .7 Finishing and curing:
 - .1 Finish concrete to CCDG section 15.4 and CSA A23.1/A23.2.

- .2 Use procedures as reviewed by or those noted in CSA A23.1/A23.2 to remove excess bleed water. Ensure surface is not damaged.
- .3 Use curing according to CCDG section 15.4.3.5.9. a humid curing is required.
- .4 Finish surfaces of concrete slabs as to meet the CSA A23.1/A23.2 standard for the class C. A vibrant rule or a self-propelled finisher should be used for the completion of structural slabs. Used finishing equipment must move on bearing rails. Refer to the CCDG (article 15.4.3.5.6) for details of installing the rails. A broom finish will be required for the rolling surface.
- .5 Unless otherwise stated, all exposed edges must be chamfered 25 mm x 25 mm.
- .8 Grout under bollards base plates using procedures in accordance with manufacturer s recommendations which result in 100 % contact over grouted area.
- .9 Joint fillers:
 - .1 Furnish filler for each joint in single piece for depth and width required for joint, unless otherwise authorized by Departmental Representative.
 - .2 When more than one piece is required for joint, fasten abutting ends and hold securely to shape by stapling or other positive fastening.
 - .3 Locate and form expansion and construction joints as indicated.
 - .4 Install joint filler.
 - .5 Use 12 mm thick joint filler to separate slabs-on-grade from vertical surfaces and extend joint filler from bottom of slab to within 25 mm of finished slab surface unless indicated otherwise. Fill with elastomer sealant up to the finished surface. Check for compatibility between joint and sealant.

3.3 SURFACE TOLERANCES

- .1 Concrete surfaces tolerances shall conform to CSA A23.1/A23.2 standard, according to the method of the straight ruler.

3.4 SURFACE FINISH

- .1 In General, horizontal surfaces must have a non-slip and in accordance with the table texture finish of "Classification of the areas of slab finishes and floor" of the standard CAN/CSA - A23.1. However, the vertical faces of structures must be smooth.

3.5 FIELD QUALITY CONTROL

- .1 Site tests: conduct tests as follows in accordance with Section 01 45 00 - Quality Control and submit report as described in PART 1 - ACTION AND INFORMATIONAL SUBMITTALS.
 - .1 Concrete pours.
 - .2 Slump.
 - .3 Air content.
 - .4 Compressive strength at 7 and 28 days.
 - .5 Air and concrete temperature.
 - .6 Other as required.

- .2 Inspection and testing of concrete and concrete materials will be carried out by testing laboratory designated by Departmental Representative for review to CSA A23.1/A23.2 and Section 01 45 00 - Quality Control.
 - .1 Ensure testing laboratory certified to CSA A283.
- .3 Ensure test results are distributed for discussion at pre-pouring concrete meeting between testing laboratory and Departmental Representative.
- .4 Departmental Representative will pay for costs of tests as specified in Section 01 29 83 - Payment Procedures for Testing Laboratory Services.
- .5 Departmental Representative will take additional test cylinders during cold weather concreting. Contractor to cure cylinders on job site under same conditions as concrete which they represent.
- .6 Non-Destructive Methods for Testing Concrete: to CSA A23.1/A23.2.
- .7 Inspection or testing by Departmental Representative not to augment or replace Contractor quality control nor relieve Contractor of contractual responsibility.

END OF SECTION

Part 1 General

1.1 SUMMARY

- .1 This section covers work requirements for underwater placed concrete associated with the installation of Piles rock sockets and piles infills.

1.2 RELATED REQUIREMENTS

- .1 Section 01 35 44 – Environmental Protection Procedures for Marine Works.
- .2 Section 03 10 00 – Concrete forming and Accessories.
- .3 Section 03 20 00 – Concrete Reinforcing.
- .4 Section 03 30 00 – Cast-in-Place Concrete.

1.3 REFERENCE STANDARDS

- .1 Cahier des Charges et Devis Généraux du Québec (CCDG), Infrastructures routières – Construction et réparation
 - .1 CCDG, chapter 15.4 – Ouvrages en béton.
 - .2 Tome VII, Norme 3101 du MTMDDET.
- .2 American Concrete Institute (ACI)
 - .1 ACI 304R-00, Guide for Measuring, Mixing, Transporting and Placing Concrete.
- .3 CSA Group CSA
 - .1 CSA A23.1/A23.2-19, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
 - .2 CSA A283-19, Qualification Code for Concrete Testing Laboratories.
 - .3 CSA A3000-18, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005),

1.4 DEFINITIONS

- .1 Concreting to the tremie pipe is to pour concrete under water, with the help of a tube connected to a truck pump allowing controlled rate of concrete placement. Use a crane if necessary, to support the tremie pipe.
 - .1 Tremie pipe: pipe has hopper at upper end and may be open ended or may have foot valve, plug or travelling plug to control flow of concrete.
 - .2 Pipe has diameter of 125 mm average, constructed from sections with flange couplings fitted with gaskets.
 - .3 Concrete is placed in hopper and sufficient head of concrete is maintained in tremie pipe to provide desired rate of flow.
- .2 Pumped concrete method: method of placing concrete underwater uses concrete pump with discharge line used in similar manner to tremie pipe.

Part 2 Products

2.1 MATERIALS

- .1 Concrete materials: to Section 03 30 00 - Cast-in-Place Concrete.
- .2 Anti-washout admixture: To CRD-C 661-06.
- .3 The use of an anti-washout admixture is obligatory.

2.2 CONCRETE MIXES

- .1 Use mixes as indications on plans and Section 03 30 00, unless otherwise indicated.

Part 3 Execution

3.1 EXAMINATION

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

3.2 PREPARATION

- .1 Refer to CCDG 15.3.5.1.3 section for Piles preparation, before concrete pouring.
- .2 Before starting the placement of the new concrete, clean thoroughly the existing surfaces of the piles and sockets that will be in contact with the concrete in order to guarantee good adhesion to the latter.
- .3 Where concrete must bond to existing surfaces, clean surfaces before 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 The cleaning of the piles and sockets must be done in the presence of the Departmental Representative. The cleaning of each pile and socket must be filmed properly by the contractor, and at his own expense to then allow the approval of the cleaning by the Departmental Representative.

3.3 INSTALLATION

- .1 Do concrete work in accordance with Section 03 30 00 - Cast-in-Place Concrete and Section 03 20 00 - Concrete Reinforcing and to CSA A23.1/A23.2. Testing for concrete to CSA A23.1/A23.2.
- .2 Where concrete placement extends above water surface, protect concrete from direct contact with air at temperature below 5 degrees C for 7 days.

- .3 Place concrete in one continuous operation to full depth required.
 - .1 Supply complete equipment for every phase of operation.
 - .2 Provide sufficient supply of concrete to complete pour without interruption.
- .4 Tremie method:
 - .1 Provide water-tight tremie pipe sized to allow free flow of concrete. Diameter of tremie pipe to be minimum 200 mm and minimum eight times maximum size of coarse aggregate.
 - .2 Provide hopper at top of tremie pipe and means to raise and lower tremie pipe.
 - .3 Provide plug or foot valve at bottom of tremie pipe to permit filling pipe with concrete initially.
 - .4 Provide minimum of one tremie pipe for every 30 m² of plan area and to maximum spacing of 6 m centre to centre. Do not move tremie pipes laterally through concrete.
 - .5 Start placement with tremie pipe full of concrete. Keep bottom of pipe buried minimum 500 mm in freshly placed 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.
- .5 Pumped concrete method:
 - .1 Follow procedures as for tremie method in placing concrete using discharge line from concrete pump as tremie pipe.
 - .2 Pump discharge line diameter: 125 mm minimum.
 - .3 The length of the discharge pipe must be marked every meter from its lower end. Place (500 mm min.) of the pipe in the concrete continuously during operation. To do this, the contractor must compare the measure taken on a tape measure, equipped with a weigh-in, with the mark identified on the 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 03 30 00 – Cast-in-Place Concrete.
- .4 Section 31 09 16.01 – Pile Driving Templates.

1.2 REFERENCE STANDARDS

- .1 Cahier des charges et devis généraux du Québec (CCDG), Infrastructures routières-
Construction et réparation
 - .1 CCDG section 15.7 – Ouvrages en acier et en aluminium.
 - .2 Tome VII, Norme 6101 du MMTMDET.
- .2 ASTM International
 - .1 ASTM A307-21, Standard Specification for Carbon Steel Bolts and Studs,
60,000 PSI Tensile Strength.
- .3 CSA International
 - .1 CSA G40.20/G40.21-13 (R2018), General Requirements for Rolled or Welded
Structural Quality Steel/Structural Quality Steel.
 - .2 CAN/CSA G164-18, Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .3 CSA S16-19, Design of Steel Structures.
 - .4 CSA W47.1-18, Certification of Companies for Fusion Welding of Steel
Structures.
 - .5 CSA W48-18, Filler Metals and Allied Materials for Metal Arc Welding
(Developed in co-operation with the Canadian Welding Bureau).
 - .6 CSA W59-18, Welded Steel Construction (Metal Arc Welding) Metric.
 - .7 ANSI/AWS D3.6, Submarine weld
- .4 The Master Painters Institute (MPI)
 - .1 Architectural Painting Specification Manual - current edition.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

- .3 Shop Drawings:
 - .1 Indicate materials, web and flange thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.
 - .2 Provide written description of welding procedure for Departmental Representative approval two (2) weeks before the beginning of work, when requested.
 - .3 Submit drawings stamped and signed by professional engineer registered or licensed in Quebec, Canada.

1.4 QUALITY ASSURANCE

- .1 Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certifications: submit product certificates signed by manufacturer 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 with manufacturer's written instructions and Section 01 61 00 - Common Product Requirements.
- .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 Apparent surfaces of stainless-steel components must be covered by a strong self-adhesive paper or peelable plastic wrap before shipment, to the site, items in question.
 - .2 Surfaces should be cleared of their protective coating at the time of the final cleaning.

Part 2 Products

2.1 MATERIALS

- .1 Steel sections and plates: to CSA G40.20/G40.21, Grade 350W.
- .2 Steel angles and plain bars: to CSA G40.20/G40.21, Grade 300W.
- .3 Steel pipes: to CSA G40.20/G40.21, Grade 350W class H.
- .4 Welding materials: to CSA W59.
- .5 Welding electrodes: to CSA W48 Series.
- .6 Bolts and anchoring bolts: ASTM A307 or ASTM A325, type 1 galvanized, except when otherwise specified.
- .7 Nuts and washers: according to the requested bolt, so as to get its full capacity. Nuts will be lubricated according to standard A563.
- .8 Grout: non-shrink, non-metallic, flowable, 15 MPa at 24 hours and 50 MPa after 28 days.

2.2 FABRICATION

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

2.3 WELDS

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

2.4 FINISHES

- .1 Galvanizing: hot dipped galvanizing with zinc coating 600 g/m² to CAN/CSA-G164.
 - .1 Chromium plating for galvanized steel that is embedded in concrete: chrome on steel with plating sequence of 0.009 mm thickness of copper 0.010 mm thickness of nickel and 0.0025 mm thickness of chromium.
- .2 Shop coat primer: MPI- EXT 5.1B
- .3 Zinc primer: zinc rich, ready mix to MPI-EXT 5.2C.
- .4 Repair of galvanized surfaces: mono-component product of pure zinc:
 - .1 Surface Preparation and application of the product according to the instructions of the manufacturer.
 - .2 Minimum thickness after drying: 87 microns (3.5 mils).

2.5 SHOP PAINTING

- .1 Apply one shop coat of primer to metal items, with exception of galvanized or concrete encased items.
- .2 Use primer unadulterated, as prepared by manufacturer. Paint on dry surfaces, free from rust, scale, grease. Paint when temperature minimum 7 degrees C.
- .3 Clean surfaces to be field welded; do not paint.

2.6 PIPE RAILINGS

- .1 Round steel pipes conforming to standard CAN / CSA-G40.21 Grade 350W, class HSS
- .2 Galvanize exterior pipe railings after fabrication.
- .3 Steel base plates: 300W grade in accordance with CSA G40.20 / G40.21.

2.7 LADDERS

- .1 Steel angles, plates, gusset plates, stiffeners, and bent plates: 300W grade according to CSA G40.20 / G40.21.

- .2 Angles must be welded as indicated in the drawings.
- .3 Steel rungs made of plain bars of 300W grade.
- .4 Finish: galvanized finish.

Part 3 Execution

3.1 EXAMINATION

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

3.2 ERECTION

- .1 Do welding work in accordance with CSA W59 and AWS D3.6 unless specified otherwise.
- .2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
- .3 Provide suitable means of anchorage acceptable to Departmental Representative such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.
- .4 Exposed fastening devices to match finish and be compatible with material through which they pass.
- .5 Supply components for work by other trades in accordance with shop drawings and schedule.
- .6 Make field connections either by welding or using bolts in accordance with CSA S16.
- .7 Deliver inserts and templates for casting into concrete to appropriate location and construction personnel.
- .8 After completion of erection, touch-up rivets, field welds, bolts and burnt or scratched surfaces.
- .9 Using a mono-component product of pure zinc, retouch surfaces galvanised to places that were burned during welding on site. Follow the manufacturer's instructions for the preparation of surfaces, the implementation and the cure.
- .10 Underwater welds shall conform to the standard ANSI/AWS D3.6M:2017 and completed by companies qualified according to the same standard. Welds must be of type B.

3.3 PROTECTION

- .1 Protect installed products and components from damage during construction.

- .2 Repair damage to adjacent materials caused by metal fabrications installation.

3.4 WELDING CONTROL AND INSPECTION

- .1 Provide written description of welding methods for approval to Departmental Representative at least four (4) weeks before start of work.
- .2 The Contractor is responsible for submitting, within five (5) days, a non-destructive testing report (method to be approved by the Departmental Representative) of the structural welds signed by an engineer licensed in the province of Québec.
- .3 For underwater welds (jacketing of piles), the welders will be qualified by the Departmental Representative. The coupons and the costs of the tests will be the responsibility of the contractor. Welders who do not meet the requirements will not be allowed to perform the work.
- .4 The Departmental Representative reserves the right to examine the welds made on site (above water). The costs of the examinations will be at the expense of the Departmental Representative.
- .5 The Contractor shall provide the Departmental Representative with all the facilities and assistance necessary for the examination of the welds, in particular having an underwater video camera, at no cost to the Departmental Representative.
- .6 If the checks reveal a defect to be repaired, the weld must be repaired and inspected again. The Contractor must modify his welding method so as to eliminate the defects noted. Repairs and the second inspection will be at the Contractor's expense.
- .7 Allow Departmental Representative to inspect manufacturing, assembly and / or assembly plant.
- .8 Report to the Departmental Representative any fault in the material or any assembly difficulty on site. Corrections made, if necessary, must be made to the satisfaction of the Departmental Representative.

END OF SECTION

Part 1 General

1.1 SCOPE OF WORK

- .1 The works covered by this section consist of the design, fabrication, and installation of one (1) aluminum pedestrian walkway (called catwalk) for the access to the new turning dolphin at Cap-Aux-Meules, as specified in the contract drawings.
- .2 This section consists of performance specifications for the abovementioned, turnkey, work package provided by the Contractor.

1.2 REFERENCE STANDARDS

- .1 American Association for State Highway and Transportation Officials (AASHTO)
 - .1 AASHTO Standard Specifications for Highway Bridges-17th Edition 2002.
 - .2 LRFD Guide Specifications for the Design of Pedestrian Bridges
- .2 Cerema (ex-Sétra)
 - .1 Footbridges Assessment of vibrational behaviour of footbridges under pedestrian loading (ISBN 2-11-095819-7);
- .3 ASTM International
 - .1 ASTM B209M-14, Standard Specification For Aluminum And Aluminum-Alloy Sheet And Plate (Metric)
 - .2 ASTM B210M-12, Standard Specification For Aluminum And Aluminum-Alloy Drawn Seamless Tubes.
 - .3 ASTM B211M-12, Standard Specification For Aluminum And Aluminum-Alloy Rolled Or Cold-Finished Bar, Rod, And Wire (Metric).
 - .4 ASTM B221M-13, Standard Specification For Aluminum And Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, And Tubes (Metric)
 - .5 ASTM B429/B429M-10, *Standard Specification For Aluminum-Alloy Extruded Structural Pipe And Tube*;
 - .6 ASTM B928, *Standard Specification for High Magnesium Aluminum-Alloy Sheet and Plate for Marine Service*
- .4 CSA
 - .1 CAN/CSA S6-19, Canadian Highway Bridge Design Code.
 - .2 CSA S269.1-16 , Falsework for Construction Purposes.
 - .3 CSA S157-17, Strength design in aluminum / Commentary on CSA S157-17 Strength design in aluminum
 - .4 CSA W47.2-11 (R2020): Certification of companies for fusion welding of aluminum
 - .5 CSA W48-18, Filler Metals and Allied Materials for Metal Arc Welding.
 - .6 CSA W59.2-18 Welded aluminum construction
 - .7 CSA W59.2 - 2018 - Welded Aluminum Construction
 - .8 W178.1-02. Certification of Welding Inspection Organizations

- .9 W178.2-18 Certification of welding inspectors
- .5 International standards:
 - .1 EN 573: 2013, Aluminum and Aluminum alloys – Chemical composition and form of wrought products
- .6 AWS (American Welding Society):
 - .1 A5.10/A5.10M:2017 Welding Consumables – Wire Electrodes, Wires and Rods for Welding of Aluminum and Aluminum-Alloys - Classification.
- .7 AA (Aluminum Association):
 - .1 AA DAF 45-2003 (R2009) Designation System for Aluminum Finishes;
 - .2 Aluminum Standards & Data 2017.

1.3 RELATED REQUIREMENTS

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Section 01 61 00 – Common Product Requirements.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00- Submittal Procedures.
- .2 Submit to the Departmental Representative a complete set of fabrication and construction drawings and specifications, as well as shop drawings.
- .3 All calculation notes, drawings, and specifications must be signed and sealed by a Professional Engineer Licensed in Québec.
- .4 Provide all manufacturer information such as catalogues, brochures, performance charts and load diagrams.
- .5 Provide material samples, finishes colors upon request from Departmental Representative.
- .6 Shop Drawings:
 - .1 Shop drawings must be signed and sealed by an engineer who is a member of the Ordre des ingénieurs du Québec.
 - .2 Indicate shop and erection details including shop splices, cuts, copes, connections, holes, bearing plates, threaded fasteners, rivets and welds. Indicate welds by CSA W59, welding symbols.
 - .3 Proposed welding procedures to approved by Canadian Welding Bureau and to be stamped by an who is a member of the Ordre des ingénieurs du Québec.
 - .4 Submit description of methods, temporary bracing and strengthening, sequence of erection and type of equipment proposed for use in erecting walkway on site.
- .7 Provide testing results and reports for review by Departmental Representative and do not proceed without written approval when deviations from design parameters are found.
 - .1 Submit in accordance with Section 01 45 00 – Quality Control.

1.5 CATWALK DESIGN CRITERIA

- .1 Design, fabricate, supply, and install one (1) catwalk having the following dimensions:
 - .1 Length between bearing supports: 15610 mm;
 - .1 This length is counted from the centerline of the bearings.
 - .2 The bearings centerline corresponds to the distance measured between the anchor bolts for both fixed and free supports.
 - .3 The final length will have to be validated on site according to the exact position of the turning dolphin.
 - .2 Free Width: 1250 mm; Width is counted from the centreline of handrails.
- .2 All components of the catwalk must be designed, fabricated, and erected in accordance with existing codes and standards. It is the contractor's responsibility to refer to all codes and standards concerned with the different structural elements and their materials. The last edition and revision of all documents must be used.
- .3 Welded joint strength
 - .1 The joints must be sized to withstand a minimum effort corresponding to 75% of the capacity of the welded members (S6-19 | 17.22.1.1)
- .4 Lift points must be calculated and indicated to the plans.
- .5 The lateral stability of the compression top cord must be analysed according to S6-19 | A5.2.
- .6 The U-frame and connections of the pony truss must provide adequate lateral stiffness to compression top cord and shall be design according to to S6-19 | A5.2.
- .7 Operational Conditions
 - .1 Design loads
 - .1 Permanent loads: Total factored load effects shall include those effects due to all permanent loads acting on the structure.
 - .2 Uniformly distributed live loads (SLS) : 4.8 kPa.
 - .3 Concentrated load: 12 kN distributed over an area of 150 mm x150 mm on the grating placed in the place causing the greatest efforts in the walkway components.
 - .4 Wind loads: design wind loads as per clause 3.10 CSA S6-19
 - .5 Snow: Snow and snow accumulation loads to be considered according to the latest edition of the National Building Code of Canada NBCC.
 - .6 Ice accretion: Ice accretion loads to be considered according to CSA S6-19 chap. 3.12.6
 - .7 Temperature effects: Temperature effects (summer and winter) shall be considered in the design and must be done must comply with the 3.9.4 CSA S6:19. The value of the aluminum thermal dilation coefficient is 24×10^{-6} .
 - .1 Maximal design temperature in summer: 27°C
 - .2 Minimal design temperature in winter: -25°C
 - .2 Load Combinations at ultimate limit states (ULS)

- .1 CSA S6: 19 specifies the factors for loads and combinations of loads in section 3.5.1. The combinations must take into account the combinations according to the seasons (winter and summer), wind (high and low).
 - .2 For snow loads, the walkway is not expected to be cleared of snow. Consider the most critical load combinations according to the latest version of the Canadian National Building Code CNBC.
 - .3 Service limit states (SLS)
 - .1 The vibrations of the walkway should not be a source of discomfort or concern to users. Carry out the assessment of the vibratory behavior under the action of pedestrians to determine the limit states of use of the walkway in accordance with the Sétra method (cerema), class IV and maximum desired level of comfort or according to the supplement to the Commentary on standard S6: 19, Canadian Highway Bridge Code in article C3.4.4.
 - .4 Allowable deflection
 - .1 6,3mm under service loads as per AASHTO recommendations.
 - .5 Durability
 - .1 Design for durability shall be done according to S6-19 | 17.6
 - .2 The service life of all structural components of the gangway, including its supports, shall be at least 75 years.
 - .6 The structure will need to incorporate elements that allow safe lifting for possible maintenance and / or replacement.
 - .7 The railings must comply with the requirements of S6-19 | 12.4.4 and 12.4.5.
 - .8 The support system shall consist in four elastomeric bearings designed as per CSA S6-19 | chap. 11. The anchoring rods shall allow no movement on the fixed support “Wharf side” and permit both transverse and longitudinal displacements of 30 mm on the free support “Dolphin side”. Sliding components integrated in the elastomeric bearings might be required according to the designer’s calculations.
 - .9 The walkway shall be fully welded in a single component ready to install on site. The grating components must be bolted on site.
 - .10 The structure and assemblies, including welding, must meet the requirements for fatigue limit states set out in CSA S6: 19.
 - .11 Welded assemblies may be made using full penetration welds, butt welds or fillet welds.
 - .12 The design of the welded joints must take into consideration both the strength of the welds and that of the areas affected by heat.
 - .13 Drainage holes must be provided at the bottom of all closed channels.
- .8 Catwalks supplier documents to be submitted for approval prior to fabrication.
- .1 Design
 - .1 Documents to be submitted to the Departmental Representative should include, without limitation, the workshop drawings, dimensions and characteristics of all parts of the catwalks. Design will have to meet each

of the design elements mentioned above. Detailed calculations notes, workshop drawings and specification by a licensed engineer who is an OIQ member will be submitted for approval 14 days before proceeding with the manufacture of the catwalk elements. Supplier should take in account a duration of 10 days for drawings, specifications and calculation notes to be approved.

Part 2 Products

2.1 Technical Data related to the catwalk

.1 The catwalk shall consist of (but not limited to) the following:

- .1 Catwalk structure in Aluminium;
- .2 Anti-slip aluminum Grating;
- .3 Aluminium handrails;
- .4 Catwalk bearing systems;

2.2 Materials

.1 The materials used to build the walkways must comply with ASTM B209, ASTM B221, ASTM B308, ASTM B429 or ASTM B928 and are as follows:

- .1 Structural members: extruded aluminum alloy 6000 Grades indicated in Table 17.3 of standard S6-14, resistant to atmospheric corrosion in marine environment.
- .2 Aluminum-alloy drawn seamless tubes: To ASTM B210M.
- .3 Aluminum bars and rods: To ASTM B211M.
- .4 Aluminum and Aluminum Alloy extruded bar, wire, rods, shapes, and tubes: To ASTM B221M
- .5 Aluminum sheet or plate: To ASTM B928M.
- .6 Aluminum work fabricator shall be certificated in accordance with CSA W47.2
- .7 Bolts, nuts, and washers for grating installation :
 - .1 Aluminum bolts shall comply with ASTM F468.
 - .2 Aluminum nuts shall comply with ASTM F467
- .8 Anchorage rods: To CSA G40.21/G40.21 350W galvanized, comprising the provision of an insulator against the electrochemical potential of the couple formed by a steel anchor rod and the aluminum of the catwalk.

Part 3 EXECUTION

3.1 Erection and installation

.1 Check on site the required length of the catwalk before any fabrication.

Part 4 QUALITY CONTROL

- .1 Provide testing results and reports for review by Departmental Representative and do not proceed without written approval when deviations from design parameters are found.
- .1 Submit in accordance with Section 01 45 00 – Quality Control.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 – Submittal procedures
- .2 Section 01 35 44 – Environmental protection procedures for marine works

1.2 DESCRIPTION

- .1 This present list of works is not necessarily complete and does not disengage the Contractor of his responsibility to complete any other work, modification or changes necessary, in order to complete with satisfaction the work stipulated in this project.
- .2 Works covers mainly, but is not limited to successful completion of the following works:
 - .1 Painting work will be done in the workshop.
 - .2 Pile sleeves:
 - .1 The zone to be painting consists in the area of all pile sleeves of the wharf extention The Contractor must take himself his own measurements of area to be paint. The Contractor could as well refer to drawing received.
- .3 The Contractor must do the work on lowest Low Level Tide period that he could paint the piles jackets at the elevation shown in the specifications.

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.
 - .1 ANSI, American National Standards Institute
 - .2 API, American Petroleum Institute
 - .3 ASME, American Society of Mechanical Engineers
 - .4 ASM, American Society for Metals
 - .5 ASTM, American Society for Testing and Materials
 - .6 AWWA, American Water Works Association
 - .7 BNQ, Bureau de Normalisation du Québec
 - .8 CNB, Code National du Bâtiment
 - .9 CSA, Canadian Standards Association
 - .10 CSST, Code de sécurité pour les travaux en construction
 - .11 MENVIQ, Ministère de l'Environnement du Québec
 - .12 NACE, National Association of Corrosion Engineers
 - .13 NFPA, National Fire Protection Association
 - .14 ONGC, Office des Normes du Gouvernement Canadien
 - .15 SSPC, Steel Structures Painting Council

- .16 ULC, Underwriters Laboratory of Canada
- .2 The edition prevailing for the above-mentioned standards, laws and regulations is the one in force at the time of the Call for Tenders. However, the Contractor must not restrict himself to the application of the above-mentioned standards only, but he must rather comply with all the standards to which his work could be related to.
- .3 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 Two component black epoxy, 85% solids content by volume, Interzone 954 type or equivalent, designed for marine applications, according to standard ASTM D-523.
- .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.

- .2 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.
- .3 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.

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.
 - .2 The 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 Paint applications
 - .1 A coating of 10% diluted paint or according to the manufacturer's specifications, will be applied in all mechanical joints or discontinuities. These are the only cases where it is allowed to dilute the paint.
 - .2 Apply a minimum coating of 510 microns dried-up (610 microns wet) of the product with an "Airless" pump 30:1 (3000 psi) with a nozzle of 635 to 690 microns and a hose of 9,53 mm, Graco type or the equivalent. The Contractor may calibrate his equipment according to his own experience and on the in situ testing.
 - .3 It is strictly forbidden to dilute the paint upon this application.
 - .4 A particular attention should be brought to the sheet piling joints in order to apply a sufficiently thick paint coating.
 - .5 The areas that cannot be painted with a pump must be painted with a paintbrush.

- .6 The contractor is specifically advised to take all precautions to prevent damage to environment and comply with the requirements of section 3.8 of this section.

3.4 CLIMATIC CONDITIONS

- .1 Upon the paint application, the surface to be painted must be at least 3°C above the dew-point, and the relative humidity should be lower than 85%. The paint application must be made when the surface temperature is higher than 10°C. 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.
- .2 The cleaning frequency depends on the weather and on the working and waiting periods during the day.
- .3 Work site waste (solids or liquids) and soiled materials (Ex. empty cans, rags, masks, etc.) must be recovered, stored 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.
- .4 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 6°C and 35°C. If the storage temperature becomes lower than 6°C, the containers will not be used for the works and shall be disposed of. The Contractor should verify with the paint manufacturer the particular storage specifications of his product. Products should be stored at 15m 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 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.

3.9 PAINT TECHNICAL DATA SHEET

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

3.10 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.

3.11 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.

3.12 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. For this inspection, if participate, the Contractor must pay for his representative's incurred expenses.
- .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.

3.13 GUARANTEE

- .1 Despite clauses of the general conditions, the guarantee period starts at the end of the paint works. The guarantee is valid for one year. The quality of the final product will be evaluate.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

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

1.2 RELATED SECTIONS

- .1 Section 01 11 01 – Work General Information
- .2 Section 01 61 00 – Common Products Requirements
- .3 Section 05 50 00 – Metal Fabrication

1.3 REFERENCES

- .1 Contractor must comply with the codes, standards and regulations, as well as with the good practice rules as recommended by the following associations, related to the Work to be executed. The federal laws and regulations prevail on the other codes and standards.
 - .1 ANSI, American National Standards Institute
 - .2 API, American Petroleum Institute
 - .3 ASME, American Society of Mechanical Engineers
 - .4 ASM, American Society for Metals
 - .5 ASTM, American Society for Testing and Materials
 - .6 AWS, American Welding Society
 - .7 AWWA, American Water Works Association
 - .8 BNQ, Bureau de Normalisation du Québec
 - .9 CEMA, Canadian Electrical Manufacturers Association
 - .10 CEQ, Quebec Electrical Code
 - .11 CGSB, Canadian Government Standard Board
 - .12 CPQ, Quebec Plumbing Code
 - .13 CSA, Canadian Standards Association
 - .14 CSST, Code de sécurité pour les travaux en construction
 - .15 MDDEP, Ministère du développement durable, de l'environnement et des parcs du Québec
 - .16 NACE, National Association of Corrosion Engineers
 - .17 NBC, National Building Code
 - .18 NFPA, National Fire Protection Association
 - .19 SSPC, Steel Structures Painting Council
 - .20 ULC, Underwriters Laboratory of Canada
- .2 The edition prevailing for the above-mentioned standards, laws and regulations is the one in force at the time of the Call for Tenders. However, the Contractor must not restrict

himself to the application of the above-mentioned standards only, but he must rather comply with all the standards to which his work could be related to.

1.4 CONTRACTOR'S COMPETENCE

- .1 Contractor should have personnel being qualified for the cathodic protection system installation and if applicable to the project, in electricity. He should submit a report written by a competent professional authorized to work in the province of Quebec, certifying that the equipment and its installation comply with the regulations in force.

1.5 GUARANTEE

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

1.6 VERIFICATION OF BASIC DATA FOR THE PROJECT REALIZATION

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

1.7 SHOP DRAWINGS

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

1.8 MINIMUM REQUIREMENTS

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

- .2 Contractor must make sure his personnel is qualified for the work execution.

Part 2 Products

2.1 GENERAL

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

2.2 SACRIFICIAL ANODES

- .1 The sacrificial anodes are of five (5) types, as indicated on the plans.
- .2 The anodes dimensions and fabrication details are indicated on the plans.
- .3 In all cases, the anode steel core should be made so that the anode is adequately adhered to the core. Before starting the anodes fabrication, the manufacturer must submit for approval the fabrication details of the central core. The core must be made out of carbon steel with good weldability and equivalent carbon of 0.40%. Sand blast the flat bar to remove the oxide.
- .4 Particular attention should be brought upon the anodes casting to avoid formation of internal gas pouches so that the anodes do not tend to come up to the water surface. Shrinkage filling after solidification is now allowed. A maximum tolerance of 2% in weight is acceptable. All the anodes must be inspected before delivery on the worksite. The inspection will be done at the Contractor facility in the Province of Quebec. The cost of the anodes shipping and handling are at the charges of the Contractor.
- .5 The chemical composition of the anodes should correspond to:
- .1 Indium : 0,014 - 0,020
 - .2 Gallium : < 0,02
 - .3 Zinc : 4,0 - 6,5
 - .4 Silicium : 0,08 - 0,20
 - .5 Cuivre : < 0,005
 - .6 Fer : < 0,002
 - .7 Mercure : < 0,001
 - .8 Étain : < 0,001
 - .9 Nickel : < 0,005
 - .10 Magnésium : < 0,010
 - .11 Manganèse : < 0,010
 - .12 Bismuth : < 0,002
 - .13 Cadmium : < 0,002
 - .14 Titanium : < 0,002
 - .15 Plomb : < 0,002
 - .16 Bore : < 0,001
 - .17 Aluminium : balance

- .6 The mercury activated anodes are not accepted. Before inspection, the manufacturer must provide the chemical analysis and the weight certificates. All anodes must be identified with anode number and heat number. All anodes must be conformed to the NACE SP0387 specifications and/or the particular demands of this specifications.
- .7 The anodes open circuit potential must be -1.08 V and the anodes capacity of 2300 AH/Kg. Adjust the anodes chemical composition to obtain these specifications. The test must be done in accordance of NACE TM0190 standard. Provide the laboratory analysis certificates.
- .8 The surface of each anode corresponding to the pile face must be covered with an epoxy paint layer. The paint should be compatible with the anode aluminum surface and resist to sea-water immersion. Before the paint application, manufacturer should submit for approval the system he intends to use. Manufacturer should prepare the surfaces according to the paint manufacturer instructions. The paint application should also be submitted for Departmental Representative's approval with a sample of paint can. The paint application will be done in shop, according to the moisture and temperature conditions prescribed by paint manufacturer. In all cases, the surfaces should be prepared by sandblasting in order to get a proper adherence and before painting, must be cleaned with a compatible solvent. The drying time will comply with the paint technical data. Upon transportation, the painted surfaces should be protected against scratches.

2.3 OTHER EQUIPEMENT

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

2.4 MATERIALS USED

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

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Section 05 50 00 – Metal Fabrications.

1.2 REFERENCE

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM A 252M-19, Standard Specification for Welded and Seamless Steel Pipe Piles.
 - .2 ASTM A 307-21, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile.
 - .3 ASTM F3125M, Standard Specification for Structural Steel Bolts, Steel, Heat Treated
- .2 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-G40.20/G40.21-13 (R2018), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steels.
 - .2 CAN/CSA-S16-19 – Limit States Design of Steel Structures.
 - .3 CSA W47.1-F03, Certification of Companies for Fusion Welding of Steel Structures.
 - .4 CSA W48-18, Filler Metals and Allied Materials for Metal Arc Welding.
 - .5 CSA W59-18, Welded Steel Construction (Metal Arc Welding) (metric version).

1.3 SYSTEM DESCRIPTION

- .1 Design Requirements: design templates to safely withstand following loads:
 - .1 All loads due to gravity that templates must be submitted. For the respect of allowable loads on the existing structure, the template can also be designed to support the equipment necessary for the construction of the works.
 - .2 Lateral loads needed to keep a firm hold of the piles in place during installation. Include the effect of waves, wind, ice and tides in the design.
 - .3 The template should be designed to allow the installation of the piles with the level of precision required for this type of structures. The inter-axis between the piles should be precise enough to avoid any construction conflicts.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Technical data sheets: submit data sheets required as well as the specifications and documentation of the manufacturer about the product.
 - .1 Specify the characteristics and criteria of product performance and the constraints attached.

- .3 Submit shop drawings required, signed and sealed by an engineer member of the order of engineers of Quebec (OIQ), which shall indicate the following:
 - .1 Material to be used;
 - .2 Methods to be used for anchoring, alignment, and testing on-site of the piles;
 - .3 Calculation parameters;
 - .4 Tolerance for the installation of piles;
 - .5 The removable elements, if any.

Part 2 Products

2.1 MATERIALS

- .1 Steel sections and plates: to CAN/CSA-G40.20/G40.21, Type 350W.
- .2 Welding materials: to CSA W48 and CSA W59.
- .3 Bolts, nuts and washers: to ASTM A 307, ASTM A490 or ASTM A325M.

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 INSTALLATION - GENERAL

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

3.2 INSTALLATION OF INCLINED PILES

- .1 Before driving inclined piles, place templates less than 10 mm from the specified elevation.
- .2 Remove, if necessary, certain elements of the templates to facilitate the installation of inclined driven piles.
- .3 Replace these elements before the implementation of other inclined driven piles or the driving of inclined piles.
- .4 Specify which elements are on the shop drawings.
- .5 Affix the inscription "Removable" on the elements to be removed.

3.3 REMOVAL OF TEMPLATES

- .1 Avoid damage to piling when removing templates.

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Section 31 09 16.01
PILE DRIVING TEMPLATES
Page 3

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 31 09 16.01 – Pile Driving Template
- .2 Section 31 62 16.19 – Tubular Steel Piles

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00- Submittal Procedures.
- .2 Technical data sheets: submit required technical data sheets as well as manufacturer's specifications and documentation for products.
- .3 Sub-Surface soil reconnaissance report: if the characteristics of the sub-surface soil differ from the specified conditions, notify the Departmental Representative in writing and await his instructions.
- .4 Submit, as indicated, the sequence of execution of the planned driving work for review by the Departmental Representative.
- .5 Equipment:
 - .1 Submit prior to pile installation for approval by Department 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.
- .6 Quality assurance
 - .1 Test reports: submit three (3) copies of certified test reports from recognized independent laboratories confirming that the piles conform to the physical characteristics and performance criteria prescribed.
 - .2 Certificates: submit documents signed by the manufacturer, certifying that the products and materials / equipment meet the requirements with regard to the physical characteristics and performance criteria prescribed.

1.3 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's instructions and Section 01 61 00 – Common product requirements.
- .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 Department Representative.

1.4 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for recycling and reuse in accordance with Section 01 74 21- Construction/Demolition Waste Management and Disposal.
- .2 Divert unused or cut off concrete materials to local facility as approved by Departmental Representative.

1.5 EXISTING CONDITIONS

- .1 A geotechnical investigation report is provided in the Construction Tender.
- .2 The geotechnical report is furnished in good faith for the information of the Contractor but the possibility of deviation from reported conditions should be recognized. It is not represented as a complete description of site conditions but only as to what was found in borings at indicated locations. The Departmental Representative assumes no responsibility for any interpretation or deduction that the Contractor may make from the data. The Contractor shall establish the nature of observable conditions to his own satisfaction and has the right to obtain at his own expenses any additional information, if necessary in his judgment.
- .3 Notify the Departmental Representative immediately if subsurface conditions are found to differ substantially from those indicated in the Contract Documents or geotechnical report.
- .4 If foundation elevations are revised by a Geotechnical Engineer because of differences between reported and actual subsurface conditions, the Contract Sum will be adjusted in accordance with the quoted Unit Prices. Extras will not be paid because of over-excavation, contractor methodologies or other conditions within the control of the Contractor.

1.6 SCHEDULING

- .1 Provide schedule of planned sequence of driving to Departmental Representative for review, at least three weeks prior to commencement of pile driving.

Part 2 Products

2.1 MATERIALS

- .1 Material requirements for piles are specified in Section 31 62 16.19 – Tubular Steel Piles.
- .2 Splice piles only with written authorization and approval of Departmental Representative.
 - .1 When permitted, provide details for Department Representative review.
 - .2 Design details of splice to bear dated signature stamp of professional engineer registered or licensed in Québec, Canada.
 - .3 If splices are authorized, they must be placed below the mudline.

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 pile 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, and to evaluate a refusal criteria.

- .2 Driveability analysis to include, but not be limited to the following: hammer, cushion, and cap block details; static soil parameters; quake and damping factors, total soil resistance, blow count, pile stresses and energy throughput at representative penetrations.
- .3 When required criteria can not be achieved with the proposed hammer, use larger hammer and take other measures as required.

Part 3 Execution

3.1 PREPARATION

- .1 Protection:
 - .1 Protect adjacent structures, services and work of other sections from hazards due to pile driving operations.
 - .2 Arrange sequencing of pile driving operations and methods to avoid damages to adjacent existing structures.
 - .3 When damages occur, remedy damaged items to restore to original or better condition at contractor's expense.
- .2 Ensure that ground conditions at pile locations are adequate to support pile driving operation and load testing operation.
 - .1 Make provision for access and support of piling equipment during performance of Work.
- .3 Preliminary drilling of holes may be authorized in order to facilitate the alignment of the piles to be installed.

3.2 INSTALLATION

- .1 Contractor shall design and construct working platform as required.
- .2 Leads: construct pile driver leads to provide free movement of hammer or vibratory hammer.
 - .1 Hold leads in position at top and bottom, with guys, stiff braces, or other means to ensure support to pile while being driven.
 - .2 Inclined leads to be used for battered piles.
- .3 Driving heads:
 - .1 Provide driving heads of size, shape, length and mass to drive piles at desired location to required depth and strength.
 - .2 Provide the driving heads with a carefully fitted cap at the top of the pile to minimize energy loss and prevent damage to the pile.
- .4 Allowable design load capacity of pile at specified load factor is as indicated in Table 5-3 of the geotechnical report (annexed). See below:

Pile Location	Outside Pile Diameter (mm)	*Ultimate Geotechnical Axial Friction Resistance (kN)	*Ultimate Geotechnical Axial Pile Tip Resistance (kN)	Factored Geotechnical Axial Capacity in Compression ULS (kN)	Factored Geotechnical Axial Capacity in Tension ULS (kN)	Minimum Embedment Length into soil (m)	Approximate Elevation of Pile Tip with Seabed Surface of -7m (Chart Dat.)
Wharf Extension (New Fenders)	508	1000	1400	900	300	12	-19
New Turning Dolphin	610	3300	4000	2800	1180	18	-25

*Ultimate resistances are approximate values only. Factored geotechnical capacities should be used for design purposes.

- .5 Installation of each pile will be subject to approval of Departmental Representative.
 - .1 Departmental Representative will be sole judge of acceptability of each pile with respect to final driving resistance, depth of penetration or other criteria used to determine load capacity.
 - .2 Departmental Representative to approve final driving of all piles prior to removal of pile driving rig from site.
- .6 Drive each pile to final required driving resistance.
 - .1 At first, drive a few piles at the pile tip elevation as shown in contract drawings.
 - .2 The pile lengths indicated in the contract drawings will be validated on site by the Departmental Representative based on dynamic tests results.
 - .3 Length adjustments could be made following dynamic tests results.

3.3 INSTALLATION / DRIVING

- .1 Use driving caps and cushions to protect piles.
 - .1 Piles with damaged heads or toes 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 pile.
- .4 Ensure no contact between pile and structure takes place when driving piles adjacent to existing structures.
- .5 Do not drive batter piles until vertical piles within radius of 5m are completed.
- .6 Restrike already driven piles lifted during driving of adjacent piles to confirm and assure resistance.
- .7 Cut off piles neatly and squarely at elevations as indicated in the contract drawings, to tolerance of plus or minus 20 mm. Cut off elevation and tolerance shall account for the continuity of rebars of the new turning dolphin as well as those of the piles extension blocks.
 - .1 Provide sufficient length above cut-off elevation so that part damaged during driving is cut off.

3.4 DRIVING TOLERANCES

- .1 See Paragraph 3.3 in Section 316216.19 – Steel tubular piles.

3.5 OBSTRUCTIONS

- .1 In case of obstruction causing a sudden and unexpected change in penetration resistance or deviation from specified tolerances, proceed as directed by Departmental Representative.
- .2 The contractor will take the time required to clear the obstruction. The Contractor must have on hand all the equipment required to remove obstructions throughout the installation of the pile.
- .3 Note shall be made that the existing 2-4Tons armour stone protecting the breakwater is not considered as an obstruction. Contractor to adapt his means and methods to complete the piles installations under such conditions (e.g. by pre-drilling or by any other applicable method). The Contractor shall provide his proposed method for the installation of the piles as well as his construction method to the Departmental Representative for his review and approval. This method shall include, but not be limited to, the details and sequence for the installation of piles.

3.6 REPAIR

- .1 Remove rejected pile and replace with new, and if necessary, longer pile.
- .2 If rejected piles cannot be removed, leave rejected pile in place, place adjacent pile and modify pile cap as directed by Departmental Representative.
- .3 No extra compensation will be made for removing and replacing or other work and design made necessary through rejection of defective piles.

3.7 FIELD QUALITY CONTROL

- .1 Generalities:
 - .1 Measurements:
 - .1 Maintain accurate records of the driving of each pile, including:
 - .1 Type and make of hammer, stroke or related energy.
 - .2 Other driving equipment such as water jet, driving cap, cushion.
 - .3 Diameter, thickness and length of pile, location of the pile in a pile group, location or designation of the group.
 - .4 Sequence of driving piles in group.
 - .5 Number of blows per metre for entire length of pile and number of blows per 25 mm for last 300 mm.
 - .6 Final tip and cut-off elevations.
 - .7 Other pertinent information such as interruption of continuous driving, pile damage.
 - .8 Record elevation taken on adjacent piles before and after driving of each pile.
 - .2 All measurements, observations and calculations associated with the Pile Driving Analyzer and wave equation analysis.

- .3 Provide a copy to the Departmental Representative.
 - .2 Replace / adjust Hammer, driving cap, and cushions, or other equipment as directed by Departmental Representative.
- .2 Pile Driving Analyzer:
 - .1 Pile Driving Analyzer and Wave Equation Analysis will be performed by a specialized testing agency appointed by the Departmental Representative to determine and confirm driving criteria such as hammer size and variation in impact, suitability of driving cap and cushions and penetration resistance relative to set (Refusal).
 - .1 Confirm criteria during pile installation by using Pile Driving Analyzer and Wave Equation Analysis.
 - .2 Three (3) piles of the new turning dolphin will be subject to driving analysis test.
 - .3 Four (4) piles of the reinforcement of the existing wharf will be subject to driving analysis test.
 - .4 Departmental Representative to select piles.
 - .2 Prepare piles to be instrumented by drilling and tapping holes for installation of strain transducers and accelerometers, as directed by Departmental Representative.
 - .3 Provide assistance, as required, in instrumentation process during initial set-up and during test.
 - .1 This assistance will include any attachment or replacement of testing equipment.
 - .4 Make allowance for probable interruption in driving for:
 - .1 Changing/modifying hammer, driving cap, cushions, or other equipment;
 - .2 Replacing/adjusting of transducers and accelerometers;
 - .3 Assessing of monitored results.
 - .5 Confirm that final set has been achieved, when instructed by restriking instrumented piles.
- .3 Dynamic test:
 - .1 The testing agency appointed by the Departmental Representative will use the pile driving analyzer and the wave equation analysis to confirm the capacities of the piles. The contractor must provide all the equipment and labor required to carry out these tests.
 - .1 Three (3) piles of the new turning dolphin will be subjected to a dynamic test
 - .2 Three (3) piles of the reinforcement of the existing wharf will be subjected to a dynamic test.
 - .2 The Departmental Representative will choose the piles for the tests. The chosen piles will undergo two tests spaced in time to allow the soil to regain its initial resistance. A duration of 48 to 72 Hours shall be expected between the 1st and the 2nd dynamic test on the same pile. No waiting charges will be payable.
 - .3 This control will be carried out by a testing agency appointed by the Departmental Representative.

- .4 The objective will be the confirmation of the achievement of the required load-bearing capacity. If this is not reached, the stake will need to be lengthened and driven and tested again.

3.8 CLEANING

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

END OF SECTION

Part 1 General

1.1 OBJECT

- .1 This section covers the piles of the wharf upgrades and the new turning dolphins.

1.2 RELATED REQUIREMENTS

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Section 01 61 00 – Common Product Requirements.
- .3 Section 03 20 00 – Concrete Reinforcing.
- .4 Section 03 30 00 – Cast-in-Place Concrete.
- .5 Section 03 37 26 – Underwater Placed Concrete.
- .6 Section 31 09 16.01 – Pile Driving Templates.
- .7 Section 31 61 13 – Pile Foundations, General Requirements.

1.3 REFERENCE STANDARDS

- .1 Cahier des Charges et Devis Généraux (CCDG) 2018 edition.
- .2 American Petroleum Institute (API)
 - .1 API SPEC 5L-04, Specification for Line Pipe, Includes Errata 1, 43rd Edition.
- .3 American Society for Testing and Materials International (ASTM)
 - .1 ASTM A106/A106M-19a, Standard Specification for Seamless Carbon Steel Pipe for High-Temperature Service.
 - .2 ASTM A252/A252M-19, Standard Specification for Welded and Seamless Steel Pipe Piles.
 - .3 ASTM A572/A572M-18, Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel.
- .4 Association canadienne de normalisation (CSA)/CSA International
 - .1 CSA-G40.20-13/G40.21-13 (R2018), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 CSA W47.1:19 - F03, Certification of Companies for Fusion Welding of Steel Structures.
 - .3 CSA W48-18, Filler Metals and Allied Materials for Metal Arc Welding.
 - .4 CSA W59-19-F03, Welded Steel Construction (Metal Arc Welding) (metric version).
 - .5 CSA-Z245.1-18, Steel Pipe.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 The contractor shall submit for approval to the Departmental Representative shop drawings showing the features of the piles, the details of joints, reinforcing plates. Welds

must be given using symbols defined in standard CAN/CSA-W59. The reference number of the welding method approved by the Canadian welding Bureau must be identified in the part 'reference' of the weld symbol. Welding and been testing methods must be indicated. All the designs submitted must be signed and sealed by a professional engineer, Member of the order of engineers of Quebec.

- .3 Product data: submit manufacturer's printed product literature, specifications and datasheet.
- .4 Test report et certificates
 - .1 Prior to fabrication, provide Departmental Representative steel producer's certificates in accordance with API SPEC 5L ASTM A252 and ASTM A572.
 - .2 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
- .5 Submit details of pile material to be used, as described in this section, for review by Departmental Representative.

1.5 MARKING

- .1 Each length of pile must be marked by the stencil, the print or embossed in a readable way to show the following information:
 - .1 name or mark of the manufacturer;
 - .2 batch number;
 - .3 dimensions, wall thickness, weight and length;
 - .4 standard CAN/CSA G40.21 - M, and steel grade, batch number.
- .2 The piles, tubular, not marked as indicated in section above, will be rejected.

1.6 QUALITY INSURANCE

- .1 In addition to the requirements of the preceding articles, the departmental representative may, at its discretion, conduct inspections and additional tests on the materials used to manufacture tubular piles.
- .2 Materials inspected or tested by the departmental representative, who will not meet the specified requirements will be rejected.
- .3 When inspection or tests reveal of the materials constituting the tubular piles not comply with the specified requirements, all costs related to the inspection and/or testing will be the responsibility of the contractor.
- .4 In the event of non-compliance with one of the controls on the selected piles for the tests, all controls must be carried out on three piles additional in the same batch, until three consecutive piles controls conform.
- .5 When a quantity greater than 10 percent of the stakes of a same batch of production presents of nonconformities, the entire batch must be rejected.
- .6 Welding: welding work will be carried out by licensed companies to a certification under the standard CSA W47.1 F09, division 1 or 2.1, Certification of companies of welding by fusion of steel structures.
- .7 The steel used in the composition of the piles and from outside of North America must be certified by an independent Canadian laboratory, at the expense of the contractor.

Samples of steel used for the certification of the piles should be taken in the presence of the Departmental representative.

- .8 The contractor should note that weld quality control will take place at the factory of the piles. This control will be at the expense of the Departmental representative. The Departmental representative will decide on the required sampling and will be the only judge of the acceptance or rejection of the piles. Only accepted piles will be transported to the construction site.

1.7 TRANSPORT, STORAGE AND HANDLING

- .1 Deliver, store and handle in accordance with Section 01 61 00 – Common product Requirements and manufacturer's written instructions.
- .2 Deliver new, undamaged materials to site, accompanied by certified test reports, with manufacturer's logo and mill identification mark provided on pipe piling, the number of batch, the dimensions, wall thickness, weight and length, standard CAN/CSA G40.21 M and steel grade. Unmarked as tubular piles will be rejected.
- .3 Storage and Protection:
 - .1 Store and handle pipe piling in accordance with manufacturer's written instructions to prevent permanent deflection, distortion or damage to interlocks.
 - .2 Support pipe piling on level blocks or racks spaced not more than 3 m apart and not more than 0.60 m from ends.
 - .3 Store pipe piling to facilitate required inspection activities and prevent damage to coatings and corrosion prior to installation.

Part 2 Products

2.1 Materials

- .1 Tubular steel piles to welded seam right longitudinal or spiral, dimension and thickness as shown in the drawings.
- .2 Steel for piles:
 - .1 CSA G40.20/21 grade 350W, ASTM A252 grade 3 modified with physical and chemical properties in accordance with ASTM A572 Gr.55.
 - .2 Yield strength: 345 MPa (Min).
- .3 Welding material: conform to ACNOR-W59.
- .4 Pile tip reinforcement (if required by the contractor): to CSA-G40.20/G40.21-M, Grade 350W
- .5 Pipe allowable tolerances:
 - .1 Deviation from straight line, specified diameter, wall thickness and out-of-roundness on body of pipe and at pipe ends to conform to API SPEC 5L.
- .6 Steel for pile jackets:
 - .1 CSA G40.20/21 grade 350W.

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 Fabricate full length piles to eliminate splicing during installation wherever possible. No joint will be accepted on the piles except in the event of necessity of additional lengths compared to the lengths specified in the drawings and with approval from the Departmental Representative.
- .2 Allowable tolerance on axial alignment to be 0.25% as measured by 3 m straight edge.
- .3 Repair defective welds as approved by Departmental Representative.
 - .1 Repairs: to CSA W59.
 - .2 Unauthorized weld repairs may be rejected.

3.3 INSTALLATION

- .1 Perform the installation of the piles according to the levels indicated in the plans.
- .2 The tolerances indicated in item paragraph .3 below are aimed at ensuring the following:
 - .1 Avoid any conflict between the piles;
 - .2 For the piles located in berthing areas (surfaces with fenders), avoid any extension of the piles beyond the virtual line of compression of fenders above Elevation -7.5m Chart Datum (CD). The virtual line of compression of fenders is defined as a line parallel to the berthing line with an offset from the edge of the concrete surface equal to the maximum fender deformation.
- .3 Tolerances on the piles are as follows. They shall be respected concurrently:
 - .1 The centre of the pile at the junction with the pile cap shall be within 50 mm measured horizontally of that specified.
 - .2 Cut-off elevation ± 20 mm;
 - .3 The deviation from vertical for vertical piles: not more than 1%;
 - .4 The deviation from the specified inclination for battered piles shall not exceed 1%;
 - .5 The tolerances mentioned above are intended to minimize the risk of conflicts between piles. Compliance with such tolerances does not relieve Contractor from his responsibility to ensure there is no conflicts between the piles.
- .4 The contractor must use work methods that preserve the lateral strength of the soil.
- .5 The tubular piles for the wharf upgrade might need to be installed by pre-drilling. Given the presence of rock materials at the toe of the existing breakwater, selected equipment must be able to meet the elevations required without delay the work schedule.
- .6 For excavated material from piles, the contractor should dispose off site.

- .7 Clean the inside of the piles using a method approved by the Departmental representative and that meets the requirements of Section 01 35 44 - Environmental Protection Procedures For Marine Works.
- .8 For driven piles, the use of shoes or other means of stiffening of the tips of the piles shall be provided to minimize potential damage to the pile toes when driving.
- .9 Assemble and install reinforcement cages as indicated.
- .10 Install concrete fill-in in accordance with Section 03 37 26 - Underwater Placed Concrete.
- .11 Fill steel pipe pile with concrete using methods to limit free fall and to prevent segregation.
 - .1 Ensure adequate vibration to completely fill cross section of pipe.

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 SUMMARY

- .1 This section covers the installation of rubber marine fenders (sourced by the fender supplier designated by the Departmental Representative) at locations indicated in the contract drawings. Installation shall cover all the connections for chains and rubber cone as indicated in the manufacturer's shop drawings and as per manufacturer's recommendations.

1.2 RELATED REQUIREMENTS

- .1 Section 03 20 00 – Concrete Reinforcing
- .2 Section 03 30 00 – Cast in Place Concrete
- .3 Section 03 10 00 – Concrete Forming And Accessories
- .4 Section 35 59 13.19 – Rubber Marine Fenders supplied for Cap-Aux-Meules wharf.
- .5 Section 02 41 99 – Demolition for Minor Works

1.3 REFERENCE STANDARDS

- .1 ASTM International
 - .1 ASTM A143/A143M-07 (2020), Standard Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement.
 - .2 ASTM A775/A775M-19, Standard Specification for Epoxy-Coated Reinforcing Steel Bars.
 - .3 ASTM A307-21, Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength
 - .4 ASTM F3125/F3125M-19e2, Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength
 - .5 ASTM C 881/C881M-20a, Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete.
- .2 CSA International
 - .1 CSA-A23.1-19/A23.2-19, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.
 - .2 CAN/CSA-A23.3-19, Design of Concrete Structures.
 - .3 CSA-G30.18-09 R(2019), Carbon Steel Bars for Concrete Reinforcement.
 - .4 CSA-G40.20/G40.21-13 (R2018), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .5 CAN/CSA-G164-18, Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .6 CSA W186-21, Welding of Reinforcing Bars in Reinforced Concrete Construction.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit documents and samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product data (for epoxy resin and cement grout): submit manufacturer's printed product literature, specifications and datasheet.
- .3 Submit shop drawings, indicating following items:
 - .1 Fenders dimensions, clearance locations and direction of assemblies as installed on structures.
 - .2 Locations, sizes and installation tolerances of anchor bolts.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Store and handle delivered materials in accordance with Section 01 61 00 – Common Product Requirements and with manufacturer s written instructions.
- .2 Storage and Handling Requirements:
 - .1 Store materials in accordance with manufacturer s recommendations in clean and dry area.
 - .2 Store and protect rubber and bolts from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.
- .3 Packaging Waste Management: remove for recycling, reuse or return to manufacturer of padding, crates, pallets, packaging materials as specified in Waste Reduction Workplan and Construction Waste Management Plan in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

1.6 QUALITY ASSURANCE

- .1 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 2 Products

2.1 MATERIALS

- .1 Concrete : As per Section 03 30 00 – Cast in Place Concrete
- .2 Epoxy Resin : As per Section 03 30 00 – Cast in Place Concrete
- .3 Grout : Non metallic non-shrink. See Section 03 30 00 – Cast in Place Concrete

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates are acceptable for rubber marine fender installation in accordance with manufacturer s written instructions.

- .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.
- .2 Fenders might be partially submerged in water at the time of construction.

3.2 INSTALLATION

- .1 Install in accordance with manufacturer's instructions and as indicated in manufacturer's shop drawings; contractor should also complete trainings required by fender manufacturer (if any).
- .2 Alter system components in accordance with written permission of Departmental Representative.
- .3 For the new turning dolphin, anchors shall be pre-cast in concrete to facilitate the Fender installation work. Provide rigid templates or basis for subjecting the bolts in the concrete and prevent them from moving at the time of the casting. Anchors shall not be in contact with reinforcing steel.
- .4 For the fenders to be installed onto the existing structures, anchors shall be installed in holes drilled into the existing concrete. Epoxy resin shall be used for anchor fixing. Drilling operations and holes cleaning shall comply with epoxy resin manufacturer in a way to achieve the desirable strength.

3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
- .3 Waste Management: separate waste materials for recycling and reuse in accordance with Section 01 74 19 – Construction and Demolition Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

Part 1 General

1.1 OBJECT

- .1 This section covers the installation of mooring bollards (Sourced by the Bollards supplier designated by the Departmental Representative) at locations indicated in the contract drawings. Installation shall cover all the anchors as indicated in the manufacturer's shop drawings and as per manufacturer's recommendations.

1.2 RELATED REQUIREMENTS

- .1 Section 03 20 00 – Concrete Reinforcing
- .2 Section 03 30 00 – Cast in Place Concrete
- .3 Section 03 10 00 – Concrete Forming And Accessories
- .4 Section 35 59 29 – Mooring Devices supplied for Cap-Aux-Meules wharf.
- .5 Section 02 41 99 – Demolition for Minor Works

1.3 MEASUREMENTS AND PAYMENT

- .1 Measure bollards per unit of bollard installed.

1.4 REFERENCE STANDARDS

- .1 ASTM International
 - .1 ASTM A143/A143M-07 (2020), Standard Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement.
 - .2 ASTM A775/A775M-19, Standard Specification for Epoxy-Coated Reinforcing Steel Bars.
 - .3 ASTM A307-21, Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength
 - .4 ASTM F3125/F3125M-19e2, Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength
 - .5 ASTM C 881/C881M-20a, Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete.
- .2 CSA International
 - .1 CSA-A23.1-19/A23.2-19, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.
 - .2 CAN/CSA-A23.3-19, Design of Concrete Structures.
 - .3 CSA-G30.18-09 R(2019), Carbon Steel Bars for Concrete Reinforcement.
 - .4 CSA-G40.20/G40.21-13 (R2018), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .5 CAN/CSA-G164-18, Hot Dip Galvanizing of Irregularly Shaped Articles.

- .6 CSA W186-21, Welding of Reinforcing Bars in Reinforced Concrete Construction.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product data (for epoxy resin and cement grout): submit manufacturer's printed product literature, specifications and datasheet.
- .3 Submit shop drawings, indicating following items:
 - .1 Bollards dimensions, clearance locations and direction of assemblies as installed on structures.
 - .2 Locations, sizes and installation tolerances of anchor bolts.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Store and handle delivered materials in accordance with Section 01 61 00 – Common Product Requirements and with manufacturer s written instructions.
- .2 Storage and Handling Requirements:
 - .1 Store materials in accordance with manufacturer s recommendations in clean and dry area.
 - .2 Store and protect rubber and bolts from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.
- .3 Packaging Waste Management: remove for recycling, reuse or return to manufacturer of padding, crates, pallets, packaging materials as specified in Waste Reduction Workplan and Construction Waste Management Plan in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

1.7 QUALITY ASSURANCE

- .1 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 2 Products

2.1 MATERIAL

- .1 Concrete : As per Section 03 30 00 – Cast in Place Concrete
- .2 Epoxy Resin : As per Section 03 30 00 – Cast in Place Concrete
- .3 Grout: non-metallic non-shrink. See Section 03 30 00 – Cast in Place Concrete

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates are acceptable for bollards installation in accordance with manufacturer s written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 INSTALLATION

- .1 Install in accordance with manufacturer's instructions and as indicated in manufacturer's shop drawings. Contractor should also complete manufacturer training
- .2 Alter system components in accordance with written permission of Departmental Representative.
- .3 For the new turning dolphin, anchors shall be pre-cast in concrete to facilitate the bollards installation work. Provide rigid templates or basis for subjecting the bolts in the concrete and prevent them from moving at the time of the casting. Anchors shall not be in contact with reinforcing steel.
- .4 For the bollards to be installed onto the existing structures, anchors shall be installed in holes drilled into the existing concrete. Epoxy resin shall be used for anchor fixing. Drilling operations and holes cleaning shall comply with epoxy resin manufacturer in a way to achieve the desirable strength.

3.3 SETTING AND GROUTING

- .1 Set mooring devices at locations and elevations as indicated.
 - .1 After tightening of anchor bolts or positioning wedges, grout under base.
 - .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 and bollards have been approved by Departmental Representative.

3.4 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
- .3 Waste Management: separate waste materials for recycling and reuse in accordance with Section 01 74 19 – Construction and Demolition Waste Management and Disposal.

- .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION