Fisheries and Oceans
Canada

Small Craft Harbours

Kégaska – Lower North Shore

Harbour Revitalization

Project n° 721181

Specifications for tender - Civil

June 2016

ELECTRICAL

APPENDICES

ENVIRONMENT AND GEOTECHNICAL DATA

PART 1 GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

.1 The work covered by this contract involves the installation of Kegaska fishing harbor in Lower North Shore of Quebec.

.2 The work includes mainly, but not limited to:

- .1 The construction of a breakwater and an access on it;
- .2 Dredging and excavation of the seabed;
- .3 The construction of an access road to the wharf ;
- .4 Replacing wood elements on the wharf ;
- .5 The demolition and construction of a concrete slab on wharf ;
- .6 Supply, transport and installation of floating docks and the installation of their anchoring system;
- .7 Modification and installation of steel floating docks ;
- .8 Construction of a parking area;
- .9 The construction of artificial reefs in the sea;
- .10 Demolition and installation of a waste oil tank;
- .11 The demolition of an old treated wood seaplane wharf ;
- .12 The partial demolition of the treated wood slip;
- .13 Electricity and lighting of site.

1.2 WORK SEQUENCE

.1 The sequence and the contractor's operation methods must comply with the following:

- .1 Allow safe navigation and free passage to ships and vehicles frequenting the commercial wharf.
- .2 Contractor must at all times provide a free and safe access for boats to commercial wharf and for the uses of the Canadian Coast Guard.
- .3 Provide access to the fish transformation plant.
- .4 Comply with Work Restrictions described in Section 01 14 00.

1.3 CONTRACTOR USE OF PREMISES

.1 Coordinate the use of the premises as per the Departmental Representative’s instructions.

.2 Only the area within the boundaries shown on the plan is available to the Contractor.

.3 If the Contractor wishes to use other land adjacent to the site, he must make an agreement

with the owners concerned and bear the cost.

.4 When the work is completed, the existing structures not included in the work should be in a condition equivalent to or superior to the condition they had been before the work began.

1.4 EXISTING SERVICES

.1 The Contractor will maintain electrical services and water services to the neighbours to the work zone.

.2 Notify the Departmental Representative and utility companies of any intended interruption of services and obtain required permission.

.3 Before commencing work, establish location and extent of utility lines in area of Work and notify the Departmental Representative of findings.

.4 Submit schedule to and obtain approval from the Departmental Representative for any shut-down or closure of active services or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.

.5 Provide temporary services when directed by the Departmental Representative to maintain all existing services.

.6 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.

.7 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.

.8 Record locations of maintained, re-routed and abandoned service lines.

.9 Construct barriers in accordance with Section 01 56 00 – Temporary Barriers and Enclosures.

1.5 WORK PERIOD

.1 Start of work: at contract award

.2 End of work: April 15th 2017

1.6 DOCUMENTS REQUIRED

.1 Maintain at job site, one copy of each of the following documents:

- .1 Contract Drawings
- .2 Specifications
- .3 Addenda
- .4 Reviewed Shop Drawings
- .5 List of Outstanding Shop Drawings
- .6 Change Orders
- .7 Other Modifications to Contract
- .8 Field Test Reports

.9 Copy of Approved Work Schedule

.10 Health and Safety Plan and Other Safety Related Documents

.11 Other documents as specified

.12 Official authorizations from regulating authorities such as CPN, PPP, etc.

1.7 RECORDING OF THE EXISTING CONDITIONS

.1 Record information on a set of opaque drawings provided by the Departmental Representative.

.2 Record information using red felt-tip markers.

.3 Record information as the work takes place. Do not cover the works before the required information has been recorded.

.4 Contract Drawings: indicate all data to show the works as they are, including the following:

.1 Location, measured in the horizontal and vertical planes, the bottom of excavations, the layer of quarry run and filter stone.

.2 Changes made on site to the dimensions and work details

.3 Changes made as a result of change orders

.4 Details not included on the original contractual documents

.5 Specifications: Register all data to describe the works as performed, including changes made by addenda or change orders.

.6 Other documents: keep the supplier certificates, certificates of inspection and test records from the quarry and site.

PART 2 PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 GENERAL

1.1 CONSTRUCTION CONSTRAINTS

.1 Execution of work for the Project must take into account several constraints, specifically the following:

.1 Access based on climatic conditions;

.2 Availability of sites for site construction facilities;

.3 Environmental constraints;

.4 Safety constraints.

.5 The neighbouring works and scheduled operation.

.1 Commercial wharf and ferry ramp: The work of the Contractor must not have any impact on the activities of the ferry and other activities at commercial wharf (presence of the *Bella Desgagnés* following a regular schedule, refueling activities, people and merchandise transportation). Storm water, potable water and electricity supply networks will be maintained. During work, Contractor will ensure construction facilities storage of materials do not in any way compromise safety of structures and surrounding property and users.

.2 Use of wharf by the Canadian Coast Guard and some Fishermen.

.3 Local traffic reaching Fishermen's and commercial wharves.

.2 The Contractor will take into account the work constraints, as no compensation will be given for overtime hours or for work performed outside normal work hours (evenings, nights, and weekends).

.3 At all times, the existing crane must remain accessible for fishermen for unloading of catches and for a vehicle to collect the fish.

1.2 EMERGENCIES

.1 The Departmental Representative may interrupt work at any time in emergency situations if, in their opinion, such interruption is necessary to protect life, structures or surrounding property or in any other event of force majeure, without possible claim on part of Contractor.

.2 The people in charge on site will be :

.1 Transport Canada commercial Wharf : Mrs Ruth Kippen, 418 726-3738.

.2 Fishermen : Mr Harold King, 418-726-3558.

.3 Representative of Daley Brothers Limited plant : Mr Ward Butt au 418-726-3531

.4 Canadian Coast Guard : Administation : Mr Sylvain Bourgeois, 418 775-0560.
Terrestrial base in Kégaska : 418 726-3970 ou 418 538-0219.

1.3 ACCESS TO WORK SITE AND CONTRACTOR SITE

.1 Carry out a topographic survey and photographic survey of the infrastructures before work begins.

.2 If Contractor causes damage to neighbouring roads or facilities, Contractor bears entire responsibility to fix or replace them at own expense and to full satisfaction of the owner.

1.4 CLEANING AND UPKEEP OF PREMISES AND ENVIRONMENTAL PROTECTION

.1 Contractor must at all times keep premises free of all accumulation of materials, rubbish, waste and debris, and must do a full final clean-up, to satisfaction of the Departmental Representative, during and at end of work.

.2 Contractor is responsible for transporting rubbish, waste and debris to appropriate locations.

1.5 WINTER CONDITIONS

.1 Snow removal of construction zone is the responsibility of Contractor. Contractor is also responsible for snow removal on all access ways outside existing roads.

.2 Particular restrictions apply to the operations of the quarry during freezing conditions. Refer to section 35 31 24 – Production of Stone.

1.6 WORK ON WEEKENDS

.1 If Contractor intends to work on Sundays, statutory holidays or at night, written notification must be given to the Departmental Representative at least 5 working days in advance. The Departmental Representative retains the right to approve, or not approve the request and/or to impose certain conditions. Contractor must have the Municipality's approval and provide the Department Representative with the proof.

1.7 INSPECTION OF PREMISES

.1 Contractor's decision to partially or completely commence work implies acceptance of existing conditions as satisfying. If Contractor performs work on defective surfaces or in unsatisfactory conditions, corrections or redoing of work will be at Contractor's expense.

1.8 BLASTING

.1 See section 31 23 16.26 – Rock Removal.

1.9 ENVIRONMENTAL CONSTRAINTS

.1 Environmental constraints are presented in Section 01 35 43 – Environmental Protection.

1.10 SURVEYING

.1 The Contractor is responsible for implementing different structures according to the Departmental Representative's plans. Contractor must survey the existing material and the perimeters of the structures to validate the connections to the existing material. Contractor

must also notify the Departmental Representative of any unexpected circumstances or anomalies detected and plan for time required for potential verification by the Departmental Representative.

1.11 MATERIELS TRANSPORTATION

.1 Transport of materials on public roads to the work site can be Monday through Saturday unless otherwise specified by the competent authorities. Transportation will be prohibited on Sundays and legal holidays

.2 The transport of materials through the municipality, may begin at 7:00 but end at 17:00. Transport outside of these hours will not be permitted. The Contractor shall obtain written permission from the Municipality for transportation outside of these hours.

1.12 NAVIGATION INTRFERENCE

.1 The Contractor shall continuously and accurately report all movements of its floating equipment to Communications Services and Maritime Traffic of the Canadian Coast Guard. He will also report to MCTS the hours of beginning and end of all construction periods.

.1 Notice for navigation must be adjusted according to the work;

.2 If required, beacon the maritime zones for safety.

1.13 FLOATING EQUIPMENT

.1 The Contractor shall provide the equipment of a size and with sufficient capacity to perform the work described in the plans and specifications including excavation, handling, transport and installation of new or recovered material mentioned in the contract.

.2 A compliance certificate for each floating equipment must be sent to the Departmental Representative before the work begins

.3 During the execution of the contract, all machinery must be maintained in good working condition, as well as being serviced correctly and quickly at any time. All equipment used must be seaworthy and be in good condition. They must, by their dimensions, their characteristics and their draft, be able to perform the work.

.4 Mark floating equipment with signaling lights in accordance with the Canada Shipping Act. Submit the signaling plan to the Departmental Representative to obtain approval in conformity with the Loi sur la protection de la navigation (LPN).

.5 Provide a listening radio on board.

.6 Establish and maintain functional buoys and signaling lights, for the duration of the contract.

.7 The Contractor shall provide, anchor and maintain, at its own expense, all the buoys or markers required to properly perform the work. If by chance or by accident, one or more buoys/or sink float adrift, they will be bailed out and/or recovered at the expense of the Contractor to the satisfaction of the Departmental Representative. The Contractor is responsible for any accident of any nature whatsoever, because of poor visibility or disposal buoys/markers during the day to their poor lighting at night, or for any other reason.

.8 Maintain functional all signs and signaling lights compulsorily installed on floating equipment required for the work, according to the "Collision Regulations" and "Navigation Safety Regulations." All equipment required for the work must be properly identified and/or visible at all times.

PART 2 PRODUCT

2.1 NOT USED

.1 Not used.

PART 3 EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 – GENERAL

1.1 MEASUREMENT METHOD

.1 Provision of materials, labour, tools, equipment, protection, transportation, administrative costs, profits, financing, etc. needed to carry out the work involved in this project is included in each of the sections hereafter, unless otherwise indicated.

.2 The contractor shall provide costing details for the items in each global unit no later than ten (10) days after the notice of offer acceptance date.

.3 The following work is measured using the global unit pricing method:

.1 Item 1 Worksite organization:

- This item includes all the elements of division 01 of the specification.
- This item also includes the work indicated in the plans and specifications for which payment is not provided under another measurement item.
- This item must not exceed 25% of the total bid amount.

.2 Item 2.1 Demolition - Seaplane dock:

- This item includes costs associated with demolition of the timber section of the seaplane dock.
- This items includes reusing and installing ballast stones from the seaplane dock in the breakwater.
- This item includes installing anchors in the existing concrete base to winterize the floating docks.
- This item does not include disposing of the treated wood.

.3 Item 2.2. Demolition – Fishermen's wharf:

- This item includes all costs associated with demolition of certain parts of the fishing wharf: treated wood sheathing, steel ladders, treated wood upright frame columns, treated wood wheel guards, concrete slab.
- This item does not include disposing of the treated wood.

.4 Item 2.3 Demolition - Used-oil tank:

- This item includes all costs associated with demolition of the used-oil tank and its supporting base, including dismantling and disposing of the tank and slab in accordance with the rules in effect.
- This item includes all procedures required for compliance with the Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations and laws.

.5 Item 2.4 Demolition - Building:

- This item includes all costs associated with demolition of the building located on the site of the future access road.
- This item includes moving equipment currently in the building and disposing of all demolition materials in accordance with environmental rules and the various municipal regulations in effect.

.6 Item 2.5 Demolition - Slipway:

- This item includes all costs associated with partial demolition of the slipway described in the plans.
- This item includes construction of concrete blocks to support the slipway.
- This item includes disposal of all waste materials other than treated wood, but does not include disposal of treated wood.

.7 Item 8.5 Winterizing of floating docks

- This item includes all costs associated with winterizing of the floating docks on the existing concrete block.
- This item includes anchors on the block and hardware.
- This item includes dock winterizing operations for winter 2017.

.8 Item 9.5 Access road – Stone work

- This item includes all costs associated with riprap protection and preparation work for the new access road.
- This item includes recovery of the existing riprap and use of the appropriate stones.
- This item includes the stones and materials necessary to strengthen the concrete curb.
- This item includes extension of the outlet.
- This item includes protection and reinstallation of existing electrical and mechanical equipment because of the new road.

.9 Item 11.1 Services - Electricity and lighting:

.1 Item 11.1.1 Wharf area:

- This item includes all costs associated with electricity and lighting work shown in the plans and described in the specifications, including, but not limited to, all connections, controls, panels, and wiring.
- This item includes moving electrical equipment currently in the shed and hooking-up connections.
- This item includes the reuse of existing equipment, if necessary, as indicated in the plans.

.2 Item 11.1.2 Breakwater area:

- This item includes all costs associated with electrical and lighting work shown in the plans and described in the specifications, including, but not limited to, all connections, transformers, controls, panels, posts, lamp-posts, light fixtures, wiring, and lamppost bases.
- This item includes installation of electrical equipment in the new shed and a new Hydro-Québec connection.
- This item includes the reuse of existing equipment, if necessary, as indicated in the plans.
- This item includes all service pedestals on the floating docks, lampposts, cable trays.
- This item includes electrical trenching under the concrete mattresses and running electrical wire between the shed and all electrical equipment.

.10 Item 11.2 Services - Potable water:

- This item includes all costs associated with providing running water in the

breakwater area.
- This item includes dismantling the existing pipe and reconnection to the Coast Guard container.

.11 Item 11.3 Services - Fence:
- This item includes all costs associated with the fence to be built and installed in the breakwater area.
- This item includes the fence around the used-oil tank.
- This item includes the fence at the breakwater service area exit.

.12 Item 11.5 Services - New shed:
- This item includes all costs associated with construction and installation of the electrical shed based on the plans.
- This item includes the bollards.
- This item does not include electrical connections.
- This item does not include the concrete slab or the shed's foundation.

.13 Item 11.6 Services - Installation of used-oil tank:
- This item includes all the costs associated with installation of the new used-oil tank provided by the Department.
- This item requires compliance with the regulatory procedures in effect.
- This item involves unloading and receiving the tank following delivery from the Department.
- This item includes the bollards.
- This item does not include the concrete slab or the fence around the tank, or the tank's foundation.

.4 The measurement method for items in the schedule of rates and prices is as follows:

.1 Item 2.6 Demolition - Disposal of treated wood:
- This item will be measured in m^3 of treated wood from the demolition disposed of. This wood can come from the following demolitions: slipway, fishing wharf, seaplane dock, building.
- This item includes costs associated with disposing of treated wood from a demolition in accordance with regulations.
- This item includes storing treated wood on the site in accordance with regulations, until it can be disposed of.

.2 Item 3.1 Dredging and excavation - Sediment dredging:
- This item will be measured by m^3 of sediment dredged, as indicated in the reports.
- This item includes costs associated with dredging sediment in the harbour and near the fishing wharf.
- This item includes permits, authorizations and notices in connection with regulations.
- This item involves reserving granular sediment recovered from the breakwater in accordance with regulations, to be used as quarry run.
- Mobilization and demobilization of excavation equipment should be included in the lump sum payment under "Worksite organization."

- Only material excavated above grade, as defined in section 35 20 23 - Dredging, and within the indicated or specified side slopes should be excavated. Overdredge volume will not be paid.
- There shall be no additional payment for delays caused by poor weather conditions or sediment movement, or activities that take place during periods when no dredging work is permitted.
- Removal or accumulation of material due to the action of currents or tides in the excavation area is not measured for payment purposes.

.3 Item 3.2 Dredging and excavation - Rock excavation:

- This item will be measured by m³ of rock excavated, as indicated in the reports.
- This item includes the costs associated with rock excavation in the harbour.
- This item includes permits, authorizations and notices in connection with regulations.
- This item involves reserving the rock recovered from the breakwater in accordance with regulations, to be used as quarry run.
- This item does not include rock excavation for floating dock anchors.
- This item does not include rock excavation for the riprap base for the future access road.
- Mobilization and demobilization of excavation equipment should be included in the lump sum payment under "Worksite organization."
- Only material excavated above grade, as defined in section 35 20 23 - Dredging, and within the indicated or specified side slopes should be excavated. Overdredge volume will not be paid.
- There shall be no additional payment for delays caused by poor weather conditions or sediment movement, or activities that take place during periods when no dredging work is permitted.
- Removal or accumulation of material due to the action of currents or tides in the excavation area is not measured for payment purposes.

.4 Item 3.3 Dredging and excavation - Disposal of contaminated sediment:

1. This item will be measured by m³ of contaminated sediment removed, as indicated on the stubs from authorized sites.
2. This item includes costs associated with disposal of contaminated sediments.
3. This item includes permits, authorizations and notices in connection with regulations.
4. This item includes storing contaminated sediment until it is disposed of in accordance with regulations.

.5 Item 3.4 Dredging and excavation - Disposal of uncontaminated sediment:

1. This item will be measured by m³ of uncontaminated sediment removed, as indicated on the stubs from authorized sites.
2. Granular material from dredging and excavation must be reused as quarry run for the breakwater, and may not be removed from the site.
3. This item includes costs associated with disposal of uncontaminated sediment.

4. This item includes storing uncontaminated sediment in accordance with regulations, until it is disposed of.

.6 Item 4.1 Timber floating dock system - floating docks:

.1 Item 4.1.1. Supplies and transportation:

1. This item shall be paid per unit provided and transported to the site.
2. This item includes costs associated with construction and transportation of timber floating docks, as described in the plans and specifications.
3. This item includes secure onsite storage of floating docks until they are installed.
4. This item does not include the retaining arms in the breakwater, or the hardware required to attach the floating docks to the arms.
5. This item does not include the hardware required for sea floor anchors.

.2 Item 4.1.2 Installation:

6. This item will be paid per unit installed in the harbour, as specified in the plans.
7. This item includes costs associated with the installation of timber floating docks, as described in the plans and specifications.
8. This item includes cleats required for the floating docks, reflective strips, fastening plates, attachments between the floating docks, overlap plates and all the necessary hardware.

.7 Item 4.2 Timber floating dock system - Gangway on floating docks :

1. This item will be measured per installed unit.
2. This item includes costs associated with construction and transportation of the 8.35 m gangway to be installed on a floating dock, as described in the plans and specifications.
3. This gangway is new and provided by the department.
4. This item includes manufacturing the fastening system for the lower and upper gangway, as described in the plans, including the upper hardware to attach the gangway to the block and the lower hardware to secure it to the floating dock.
5. This item includes installation of the gangway sliding plate on the floating dock.
6. This item does not include construction of the concrete gangway block.

.8 Item 4.3 Timber floating dock system - Anchor block and anchoring system on floating docks

1. This item will be measured per unit of blocks and retaining arms manufactured and installed on the floating docks.
2. This item includes costs associated with concrete blocks in the breakwater and retaining arms.
3. This item includes the hardware required to attach the retaining arm to the dock and to the block.
4. This item includes the foundation under the concrete block.

.9 Item 4.4 Timber floating dock system - Anchoring of docks to the sea floor

1. This item will be measured per unit of floating docks anchored to rock.

2. This item includes the costs associated with sea floor anchorage.
3. This item includes the hardware, shackles, chains, eye bolts, etc., as well as grout.
4. This item includes additional dredging required to install rock anchors, if necessary.

.10 Item 5.1 Steel floating dock system - Modifications:

1. This item will be paid per unit of steel floating dock modified, as specified in the plans.
2. This item includes costs associated with modifications to the steel docks.
3. Each steel floating dock will be paid for at the same rate, regardless of the type of modification.
4. This item includes handling to remove the floating dock from the water and replace it.
5. This item includes transporting the floating dock to the workshop and leak testing on the floating dock after the work is completed.

.11 Item 5.2 Steel floating dock system - Gangway on steel dock:

1. This item will be measured per installed unit.
2. This item includes costs associated with the 8.91 m gangway to be installed on a timber floating dock, as described in the plans and specifications.
3. This gangway is to be recovered from the demolition of the seaplane wharf.
4. This item includes manufacturing the fastening system for the lower and upper gangway, as described in the plans, including the upper hardware to attach the gangway to the block and the lower hardware to secure it to the steel floating dock.
5. This item includes verification and adjustment of the existing sliding plate on the steel floating dock and manufacturing and installation of the gangway transition plate.
6. This item does not include construction of the concrete gangway block.
7. This item includes temporary storage of the gangway on the site.

.12 Item 5.3 Steel floating dock system - Anchor blocks and anchoring system on steel floating docks

1. This item will be measured per unit of blocks and retaining arms manufactured and installed on the steel floating docks.
2. This item includes costs associated with concrete blocks in the breakwater and retaining arms for the steel floating docks.
3. This item includes the hardware required to attach the retaining arm to the floating dock and to the block.
4. This item includes the anchor block foundation.

.13 Item 6.1 Breakwater - Supply of stone for breakwater

1. This item includes the costs associated with producing new rock from a quarry.
2. The unit prices for the different categories of rock include production and weighing of new rock incorporated into the breakwater.
3. Included in the unit prices are all quality control measures, including

materials testing, granulometric testing on filter stone and armourstone, and verification reports.

4. Stone from the quarry must be weighed on scales that are certified to the department representative's satisfaction. The certified scales must be the weight-recording type, designed to weigh the stone and the vehicle transporting it. The contractor must produce and submit to the department's representative copies of the transporter's weight tickets for all types of stone for each full load. The weight tickets must indicate the weight, the time and date of the weighing, and the delivery date.
5. This item does not include stone from a demolition that can be incorporated into the project.
6. This item will be paid per metric ton of stone produced in the quarry and belonging to the department.
7. This item is subdivided as follows:
    1. Item 6.1.1 4 mt to 6 mt
    2. Item 6.1.2 2 mt to 3 mt
    3. Item 6.1.3 Filter stone
    4. Item 6.1.4 Quarry run

.14 Item 6.2 Breakwater - Transportation of stone for breakwater

1. This item includes costs associated with transporting the stone to the Kegaska harbour.
2. The unit prices for the different categories of stone include handling and transporting the stone incorporated into the breakwater.
3. Stone from a quarry must be weighed on scales that are certified to the department representative's satisfaction. The contractor must produce and submit to the department's representative copies of the transporter's weight tickets for all types of stone for each full load. The weight tickets must indicate the weight, the time and date of the weighing, and the delivery date.
4. Items 6.2.1 to 6.2.4 refer to new stone produced by the contractor.
5. Item 6.2.5 involves 4-6 mt and 2-3 mt of stone provided by the department located 3 km from Kegaska harbour.
6. This item will be paid per metric ton of stone transported to the site and belonging to the department.
7. This item is subdivided as follows:
    1. Item 6.2.1 4 mt to 6 mt
    2. Item 6.2.2 2 mt to 3 mt
    3. Item 6.2.3 Filter stone
    4. Item 6.2.4 Quarry run
    5. Item 6.2.5 Stone provided by the department (2-3 mt and 4-6 mt)

.15 Item 6.3 Breakwater - Installation of stone for breakwater

1. This item includes costs associated with installing the stone in the breakwater as specified in the plans.
2. The unit prices for the different categories of stone include handling the stone to add it to the breakwater.
3. This item will be paid per metric ton of stone added to the breakwater up

to the specified limits.

4. No payment will be made for stone installed in excess of the specified limits.
5. Stone recovered from demolition
6. This item is subdivided as follows:
    1. Item 6.3.1 4 mt to 6 mt
    2. Item 6.3.2 2 mt to 3 mt
    3. Item 6.3.3 Filter stone
    4. Item 6.3.4 Quarry run

.16 Item 6.4 Breakwater - Protection wall

1. This item will be measured and paid per linear metre of protection wall built and installed, according to the plans.
2. This item includes costs associated with the protection wall on the breakwater, including hardware, wood, and base.

.17 Item 6.5 Breakwater – Concrete mattress

1. This item will be measured and paid per m² of concrete mattress built and installed, according to the plans.
2. This item includes costs associated with the concrete mattress on the breakwater, including hardware, foundations and base.

.18 Item 7.1 Repair of wharf - Replacement of timber components

.1 Item 7.1.1 Sheathing:

1. This item includes all costs associated with replacement of sheathing, as described in the plans.
2. This item will be measured per m² of sheathing replaced.
3. This item includes wood, hardware and paint.

.2 Item 7.1.2. Ladders:

4. This item includes all costs associated with replacement of ladders, as described in the plans.
5. This item will be paid per unit installed.
6. This item includes ladders, hardware, grips, fenders, and painting fenders.

.3 Item 7.1.3 Wheelguards:

7. This item includes all costs associated with replacement of wheelguards, as described in the plans.
8. This item will be paid per linear metre replaced.
9. This item includes the steel corner plate.
10. This item includes wood, hardware and paint.

.19 Item 7.2 Wharf repair - Deck slab

1. This item includes all costs associated with construction of the slab, as described in the plans.
2. This item will be measured per m³ of slab built.
3. This item includes the frames, joints, formwork, cure, and all requirements.

.20 Item 7.3 Wharf repair - Fill

1. This item includes all costs associated with the fill to be placed under the

slab.

2. This item will be paid per ton of fill used.

.21 Item 7.4 Wharf repair - Cleat reinstallation

1. This item includes all costs associated with recovery and installation of cleats.
2. This item shall be paid per unit reinstalled on the guard wheels.
3. This item includes the hardware, cleat preparation, and paint.

.22 Item 8.1 Concrete - Lamppost base

1. This item includes all costs associated with construction and installation of lamppost bases, both in the parking lot or on the breakwater.
2. This item will be paid per unit built and installed.
3. This item includes excavation, foundations, hardware, cleat preparation, and paint.

.23 Item 8.2 Concrete - Base for new shed

1. This item includes all costs associated with construction and installation of the base for the new shed.
2. This item will be paid per unit built and installed.

.24 Item 8.3 Concrete - Used-oil tank base:

1. This item includes all costs associated with construction and installation of the base for the new used-oil tank.
2. This item will be paid per unit built and installed.

.25 Item 8.4 Concrete - Gangway block

1. This item includes all costs associated with construction and installation of the concrete gangway block.
2. This item will be paid per unit built and installed.
3. This item includes the foundation under the block.
4. This item does not include the hardware for attaching the gangway.

.26 Item 9.1 Access road - Paving

1. This item includes all costs associated with paving the new access road.
2. This item will be paid per m^2 of paved road.
3. This item includes the paving foundation.

.27 Item 9.2 Access road - Quarry run

1. This item includes all costs associated with quarry run for construction of the new access road.
2. This item will be paid per ton of quarry run used.
3. This item does not include recovery of existing riprap.

.28 Item 9.3 Access road - Closure plate

1. This item includes all costs associated with construction and installation of the access road closure plate, as described in the plans.
2. This item will be paid per unit.

.29 Item 9.4 Access road - Concrete curb

1. This item includes all costs associated with construction and installation of the access road closure plate, as described in the plans.

2. This item will be paid per linear metre of concrete curb built and installed.
3. This item includes rock anchors, curb foundations, and weepholes.

.30 Item 10.1 Parking lot - Quarry run

1. This item includes all costs associated with laying down the quarry run needed to construct the parking lot.
2. This item will be paid per metric ton of quarry run used.

.31 Item 10.2 Parking lot - MG-20

1. This item includes all costs associated with applying the MG-20 needed to construct the parking lot.
2. This item will be paid per metric ton of MG-20 used.

.32 Item 10.3 Parking lot – 400-600 mm stone

1. This item includes all costs associated with applying the 400-600 mm stone needed to construct the parking lot.
2. This item will be paid per metric ton of 400-600 mm stone used.

.33 Item 10.3 Parking lot - Concrete curb

1. This item includes all costs associated with construction and installation of the concrete curbs, as described in the plans.
2. This item will be paid per linear metre of concrete curb installed.
3. This item includes rock anchors and weepholes.

.34 Item 11.4 Services - Navigation light:

.1 Item 11.4.1 Shaft construction:

1. This item includes all costs associated with construction of the navigation shaft, as described in the plans.
2. This item will be paid per unit built. NOTE: only one shaft is required for this project, but the department wishes to build two.
3. This item includes the base plate, drilling, stiffeners, and the necessary welds.

.2 Item 11.4.2 Base:

4. This item includes construction of the concrete navigation light base and its foundation.
5. This item will be paid per unit built.

.3 Item 11.4.3 Installation:

6. This item includes installation of the navigation light and base, as specified in the plans.
7. This item will be paid per unit installed.
8. This item includes installation of all the electrical material provided by the department for the navigation light (light fixture, regulator, solar panel, batteries and storage box).

.35 Item 12.1 Artificial reefs - Supply 400-750 mm stone

1. This item includes all costs associated with supplying 400-750 mm stone for the artificial reefs.
2. This item will be paid per metric ton supplied and delivered to the department.

3. This item includes production, handling, and delivery to the department.

.36 Item 12.2 Artificial reefs - Construction

1. This item includes all costs associated with the construction of artificial reefs.
2. This item will be paid per unit of artificial reef built, as indicated in the plans.
3. This item includes transportation of stone supplied by Department, which is : 510 mt of 200-400 mm stone and 345 mt of 400-740 mm stone. Those stones are located at 3 km from Kegaska harbour.
4. This item includes transportation and handling the stone as far as the construction site, including stone supplied by Contractor and stone supplied by Department.
5. This item includes the bathymetric report for the reef after the contractor builds it and all costs and data processing associated with this bathymetry.

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 This section addresses Inspections and tests to be performed by the Departmental Representative. It completes the section 01 45 00 Quality Control and the particular requirements described in the sections 03 to 35 for the Contractor.

1.2 APPOINTMENT AND PAYMENT

.1 The Departmental Representative will designate a laboratory services for control tests in addition to those required by the Contractor to meet the requirements stipulated in section 01 45 00. Laboratory costs to be covered by the Departmental Representative, except:

.1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.

.2 Inspection and testing performed exclusively for Contractor's convenience.

.3 Mill tests and certificates of compliance.

.4 Tests specified to be carried out by Contractor under supervision of the Departmental Representative.

.2 Where tests or inspections by designated testing laboratory reveal Work not in accordance with contract requirements, the Contractor will pay costs for additional tests or inspections as required by the Departmental Representative to verify acceptability of corrected work.

1.3 CONTRACTOR'S RESPONSIBILITIES

.1 Supply labour and facilities to:

.1 Provide access to Work for inspection and testing.

.2 Facilitate inspections and tests.

.3 Make good Work altered by inspection and testing.

.4 Provide storage on site for laboratory's exclusive use to store equipment and cure test samples.

.2 Notify the Departmental Representative sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test.

.3 Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.

.4 Pay costs for uncovering and making good Work that is covered before required inspection or testing is completed and approved by the Departmental Representative.

PART 2 PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 01 32 16.07 – Construction Progress Schedules – Bar (GANTT) Chart

.2 Section 01 33 00 – Submittal Procedures.

.3 Section 01 52 00 – Construction Facilities

.4 Section 01 56 00 – Temporary Barriers and Enclosures

.5 Section 01 78 00 – Closeout Submittals

1.2 ADMINISTRATIVE

.1 Schedule progress meetings throughout the progress of the work, at the request of the Departmental Representative, who will hold the meetings.

.2 The Representatives of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.3 PRECONSTRUCTION MEETING

.1 Within 15 days after awarding the Contract, hold a meeting of parties to discuss and resolve administrative procedures and responsibilities.

.2 This meeting shall be attended by the Departmental Representative, the Contractor and any other parties deemed necessary by the Departmental Representative, the Contractor's Representative and sub-contractors who regularly participate in the meetings and are authorized to intervene in the name of the parties they represent.

.3 Establish time and location of meeting and notify parties concerned minimum 5 days before meeting.

.4 Agenda to include:

.1 Appointment of official representative of participants in the Work.

.2 Schedule of Work: in accordance with Section 01 32 16.07 – Construction Progress Schedules – Bar (GANTT) Chart.

.3 Schedule of submission of shop drawings, samples, and colour chips in accordance with Section 01 33 00 – Submittal Procedures.

.4 Requirements for construction facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 – Construction Facilities.

.5 Site security in accordance with Section 01 56 00 – Temporary Barriers and Enclosures.

.6 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.

.7 Record drawings in accordance with Section 01 33 00 – Submittal Procedures.

.8 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 – Closeout Submittals.

.9 Monthly progress claims, administrative procedures, photographs, holdbacks.

.10 Appointment of inspection and testing agencies or firms.

.11 Insurances, transcript of policies.

.12 Work supervision modalities.

.13 Environmental restrictions.

.14 Continuity of operations.

.15 Legal and environmental requirements.

1.4 PROGRESS MEETINGS

.1 Progress meetings shall be held every 3 to 4 weeks throughout the project, or more often if necessary as directed by the Departmental Representative. Because of the remoteness of site, some meetings may be held by teleconference.

.2 Agenda to include:

.1 Review, approval of minutes of previous meeting.

.2 Review of Work progress since previous meeting.

.3 Field observations, problems, conflicts.

.4 Problems which impede construction schedule.

.5 Review of off-site fabrication delivery schedules.

.6 Corrective measures and procedures to regain projected schedule.

.7 Revision to construction schedule.

.8 Progress schedule, during succeeding work period.

.9 Review submittal schedules: expedite as required.

.10 Maintenance of quality standards.

.11 Review proposed changes for effect on construction schedule and on completion date.

.12 Other business.

PART 2 PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 EXECUTION

3.1 ROLES OF THE PARTICIPANTS

.1 The Departmental Representative will prepare the agenda.

.2 The Departmental Representative will preside over the meeting.

.3 The Departmental Representative will write up the minutes of meetings and distribute them within 5 days following the meeting.

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 01 33 00 – Submittal Procedures

.2 Section 01 14 00 – Work Restrictions

.3 Section 01 35 43 – Environmental Protection

1.2 DEFINITIONS

.1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.

.2 Bar Chart (GANTT Chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally, Bar Chart should be derived from commercially available computerized project management system.

.3 Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.

.4 Construction Work Week: Monday to Friday, inclusive, will provide five day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.

.5 Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.

.6 Master Plan: summary-level schedule that identifies major activities and key milestones.

.7 Milestone: significant event in project, usually completion of major deliverable.

.8 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.

.9 Project Planning, Monitoring and Control System: overall system operated by Departmental Representative to enable monitoring of project work in relation to established milestones.

1.3 REQUIREMENTS

.1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.

.2 Plan to complete Work in accordance with prescribed milestones and time frame.

.3 The Contractor must begin work immediately after having submitted the insurance certificate to the satisfaction of the contractual authority.

.4 The work schedule and the Bar Diagram (GANNT) must take into account the restrictions imposed on the works and described in the related sections.

1.4 DOCUMENTS/SAMPLES TO SUBMIT FOR APPROVAL/INFORMATION

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

.2 Submit to Departmental Representative within 10 working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.

1.5 PROJECT MILESTONES

.1 The following project milestones are essential conditions to the contract which must be indicated in the Project Work Schedule.

.1 Award of Contract: to confirm

.2 End of Work: April 15th, 2017.

1.6 MASTER PLAN

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

.2 The Departmental Representative will review and return revised schedules within 5 working days.

.3 Revise impractical schedule and resubmit within 5 working days.

.4 Accepted revised schedule will become Master Plan and be used as baseline for updates.

1.7 PROJECT SCHEDULE

.1 Develop detailed Project Schedule derived from Master Plan.

.2 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:

.1 Award.

.2 Identification of materials which have deliveries critical to the schedule, including:

.1 Date of issue and approval of drawings

.2 Date of orders

.3 Date of deliveries

.3 Other shop drawings, or samples.

.4 Permits.

.5 Mobilization.

.6 Dredging

.7 Demolition of timber elements on existing wharf

.8 Construction of breakwater

.9 Construction of new timber elements on wharf

.10 Construction and installation of floating wharfs

.11 Construction of new access road

.12 Services to wharf.

1.8 PROJECT SCHEDULE REPORTING

.1 Update Project Schedule on weekly basis reflecting activity changes and completions, as well as activities in progress.

.2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

1.9 PROJECT MEETINGS

.1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.

.2 Weather related delays and proposed remedial measures will be discussed and negotiated.

PART 2 PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Electrical Scope of work.

1.2 ADMINISTRATIVE

.1 Submit to the Departmental Representative à list of submittals for review. Submit promptly and in an orderly sequence to not cause delay in work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time, and no claim for extension by reason of such default will be allowed.

.2 Do not proceed with work subject to submittal and review process until review is complete.

.3 Present Shop Drawings, Product Data, Samples and mock-ups in SI metric units.

.4 Review submittals prior to submission to the Departmental Representative. This review indicates that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements stated in the Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.

.5 Notify the Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents, stating reasons for deviations.

.6 Verify that field measurements and affected adjacent structures are co-ordinated.

.7 Contractor's responsibility for errors and omissions in submission is not waived by the Departmental Representative's review of submittals.

.8 Keep 1 reviewed copy of each submission on site.

.9 Accompany submissions with transmittal letter containing:

- .1 Date;
- .2 Project title and number;
- .3 Contractor's name and address;
- .4 Identification and quantity of each document;
- .5 Other pertinent data.

.10 Submit WHMIS Material Safety Data Sheets.

1.3 REQUIRED CONTRACTOR DOCUMENTS

.1 List of documents required from Contractor over course of work is found in Appendix A. This list is not restrictive.

.2 Contractor must also consult following sections:

- .1 Electrical scope of works.

1.4 CERTIFICATES AND TRANSCRIPTS

.1 Immediately after award of Contract, submit to the Departmental Representative documents required by organization with jurisdiction over workers' compensation.

1.5 SHOP DRAWINGS AND PRODUCT DATA

.1 The term "Shop Drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.

.2 Quality: provide original Shop Drawings by email in PDF format. Shop Drawings will not be accepted by fax for reasons of clarity.

.3 Submit drawings stamped and signed by professional by a registered and licensed professional in Quebec.

.4 Indicate materials, methods of construction, required connexions and anchors, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where items or equipment attach or connect to other items or equipment, indicate that such items have been co- ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

.5 Adjustments made to Shop Drawings by the Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to the Departmental Representative prior to proceeding with Work.

.6 Accompany submittals with presentation data (see Appendix B) summarizing following information:

.1 Date and revision dates;

.2 Project title and number;

.3 Name and address of Contractor, subcontractor, supplier and manufacturer;

.4 Identification and quantity of each Shop Drawing, Product Data and Sample;

.5 Other pertinent data.

.7 Contractor will be responsible for reproducing Shop Drawing presentation data and Shop Drawings in sufficient quantities for all subcontractors and suppliers, and for providing an additional copy to the Departmental Representative, and additional copies for operating and maintenance manuals.

.8 Shop Drawings will be reviewed only if submitted according to described procedure.

.9 Before sending Shop Drawings to the Departmental Representative for verification, Contractor must:

.1 Number each page;

.2 Point out all equipment and/or accessories included in Shop Drawings;

.3 Verify that Shop Drawings are in accordance with plans and specifications with regard

to quality, characteristics and outline.

.10 The Departmental Representative will have 10 working days from date of receipt of documents at their office to verify Shop Drawings.

.11 Verification of Shop Drawings by the Departmental Representative is an intermediate quality control step and will not constitute a change order to Contract Documents.

.1 The Departmental Representative will verify drawings submitted by Contractor only with regard to overall layout of equipment. Contractor's or supplier's responsibility for accuracy of documents or their compliance with Contract Documents and work site conditions is not relieved by the Departmental Representative's review. Notes made by the Departmental Representative on drawings are not restrictive.

.12 Following 4 notes may be found on Departmental Representative 's verification stamp:

.1 NO CORRECTION NOTED means Contractor may proceed according to drawing;

.2 MAKE INDICATED CORRECTIONS means Contractor may proceed according to drawing, taking into consideration notes added by the Departmental Representative; copy of drawing becomes official copy, and Contractor is not required to resubmit drawing;

.3 RESUBMIT means information on drawing is incomplete or drawing is incomplete, illegible, etc., and information does not allow the Departmental Representative to determine compliance with plans and specifications; in such case, the Departmental Representative may indicate on drawing points that Contractor must specify or complete before resubmitting drawing;

.4 NOT ACCEPTED means drawing includes materials or structures that are not in compliance with plans and specifications; in such case, Contractor must provide the Departmental Representative with another drawing as per requirements of plans and specifications.

.13 Make changes to Shop Drawings as the Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify the Departmental Representative in writing of revisions other than those requested.

.14 Submit 1 electronic copy of product data sheets or brochures when shop drawings will not be prepared due to standardized manufacture of product.

.15 Keep 1 reviewed copy of Shop Drawings and Appendix B, Shop Drawings – Presentation Data, on site, and make available at all times for required purposes.

.16 Submit 1 electronic copy of test reports as requested by the Departmental Representative.

.1 Report signed by authorized official of testing laboratory must confirm that material, product or systems identical to specified material, product or system and that it has been tested in accordance with specified requirements.

.2 Testing must have been performed within 3 years of date of Contract award for project.

.17 Submit 1 electronic copy of required certificates and as requested by the Departmental Representative.

.1 Certificates must be printed on manufacturer's letterhead and signed by responsible

officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.

.2 Certificates must be dated after award of the contract and state the project's name.

.18 Submit 1 electronic copy of required manufacturer's instructions in specification Sections and as requested by the Departmental Representative.

.1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.

.19 Submit 1 electronic copy of manufacturer's field reports as requested in specification Sections and as requested by the Departmental Representative.

.20 Submit documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.

.21 Submit 1 electronic copy of operation and maintenance data as requested in specification Sections and as requested by the Departmental Representative.

.22 Delete information not applicable to project.

.23 Supplement standard information to provide details applicable to project.

.24 If, upon review by the Departmental Representative, no errors or omissions are discovered in Shop Drawings or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If Shop Drawings are rejected, noted copy will be returned, and resubmission of corrected Shop Drawings through same procedure indicated above must be performed before fabrication and installation work may proceed.

.25 Review of Shop Drawings by the Departmental Representative is for sole purpose of ascertaining conformance with general concept.

.1 This review will not mean that the Departmental Representative approves detailed design inherent in Shop Drawings, responsibility for which will remain with Contractor, and such review will not relieve Contractor of responsibility for errors or omissions in Shop Drawings or of responsibility for meeting requirements of construction and Contract Documents.

.2 Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

.26 Upon receipt of the Departmental Representative's letter of intention, the successful Bidder will have 30 working days to provide all Shop Drawings for approval.

1.6 SAMPLES

.1 Contractor must submit for Departmental Representative's approval, manufacturer's standardized samples as reasonably required by Departmental Representative. Samples must be labelled indicating its origin and intended use in Work, in accordance with requirements of Contract Documents.

.2 Contractor must provide specified Samples of complex or sized products or elements.

.3 Do not order, purchase or produce products or materials before receiving written approval of Samples required in specifications.

.4 Products and structures must be similar to approved Samples.

1.7 TESTING AND PROPORTIONING

.1 Contractor must provide test results and dosing mixtures requested by the Departmental Representative.

.2 In particular, no pouring of concrete or placement of pavement will be authorized before Contractor proves compliance of materials.

1.8 PHOTOGRAPHIC DOCUMENTATION

.1 Submit electronic and hard copy of colour digital photography in fine resolution, weekly with progress statement, as directed by the Departmental Representative.

.2 Project identification: name and project number of project and date of exposure indicated.

1.9 FINAL DRAWINGS

.1 Site Records

.1 Provide 1 set of drawings and mark changes as Work progresses.

.2 Transfer information weekly to reproducibles, revising reproducibles to show work as actually installed.

.3 Keep drawings on site and make available for reference purposes and inspection.

.2 As-Built Drawings

.1 Before starting testing, adjusting and balancing of systems, finish as-built drawings.

.2 Identify each drawing in lower right hand corner in letters at least 12 mm high as follows: “AS BUILT DRAWINGS: THIS DRAWING HAS BEEN REVISED TO SHOW STRUCTURES AND SYSTEMS AS INSTALLED” Signature of Contractor) (Date).

.3 Submit drawings to the Departmental Representative for approval and make corrections as directed.

.4 Submit completed reproducible as-built drawings with operating and maintenance manual.

.5 Submit 1 copy of each as-built drawing and incorporate it into final report on testing, adjusting and balancing of systems and installations.

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 REQUIRED DOCUMENTS AT START OF WORK SITE

.1 These documents must be completed and submitted in accordance with the requirements of the *General Condition of Contract* as soon as the contract is awarded:

- .1 Performance bond
- .2 Bond for obligations, pay, materials and services
- .3 Certificate of insurance
- .4 List of subcontractors and their contact information
- .5 List of suppliers with addresses and contact persons
- .6 List of machinery used
- .7 List of hourly rates for labour and machinery
- .8 List of staff assigned to project and their contact information
- .9 Work schedule
- .10 Safety program
- .11 Opening of work site to CSST

PART 2 DOCUMENTS REQUIRED WHILE WORK IS IN PROGRESS AND UNTIL PROVISIONAL ACCEPTANCE

.1 These requirements must be met prior to application for provisional acceptance (prerequisite for acceptance) for acceptance with reservations.

- .1 List of Shop Drawings
- .2 Shop Drawings
- .3 Test reports (ex. concrete bundling tests)
- .4 Manufacturer's instructions
- .5 Factory testing and verification documentation
- .6 *In situ* testing and verification program
- .7 Documentation of testing
- .8 Start-up and commissioning programs
- .9 Operating manuals
- .10 Manufacturer's manuals
- .11 As-built plans
- .12 Personnel training program
- .13 Parts list

PART 3 DOCUMENTS REQUIRED FOR FINAL ACCEPTANCE OF WORK

.1 These requirements must be met prior to final acceptance of Work.

- .1 List of deficiencies 100% remedied and initialed by the Departmental Representative.

END OF APPENDIX A

GENERAL CONTRACTOR OR PROJECT MANAGER:	
Responsible person:	
Telephone: ( )	Email:

SPECIALTY CONTRACTOR: Address:	
Responsible person:	
Telephone: ( )	Email:

SPECIALTY (discipline):	
Shop drawing No.:	**No. of Pages:**
Deadline for delivery (after verification):	
DESCRIPTION OF SHOP DRAWING:	
Reference to the plan:	
Reference to the specifications: Section: Subsection: Page:	

DISTRIBUTOR: Address:	
Responsible person:	
Telephone: ( )	Fax: ( )

PRODUCT SUBMITTED:	**DRAWING ISSUED FOR:**
☐ As is ☐ Equivalent ☐ Substitution	☐ Verification ☐ Information ☐ Coordination ☐ Other:

REVISION	**DATE OF ISSUE**

NOTE:

VERIFICATION OF COMPLIANCE

Nature and scope of the verification

☐ Compliance with plans and specifications
☐ Other:

This verification does not constitute a complete and detailed verification of the design.

☐ No correction noted Make
☐ the indicated corrections
☐ Correct and resubmit
☐ Not accepted

Signature ☐ Engineer ☐ Other Date

Name OIQ member No

The verification of this document is restricted to the indicated nature and scope. It does not release the person or business that prepared it from any obligations of any kind

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 01 14 00 – Work Restrictions

.2 Section 01 33 00 – Submittal Procedures

.3 Section 01 35 29.06 Appendix A – Maintenance and Inspection work of Maritime Structures – H&S sections – Material Lifting – Fall Protection – Underwater works

.4 Section 01 35 43 – Environmental Protection

1.2 SECTION INCLUDES

.1 Contractor must manage his activities such that health and safety of public and work site/workplace personnel, and environmental protection always take precedence over issues related to cost and work schedule.

1.3 REFERENCES

.1 Depending on context, latest version of following documents must always be used:

.1 *Canada Labour Code*, Part 2, Canada Occupational Safety and Health Regulations.

.2 Canadian Standards Association (CSA).

.3 *Act respecting occupational health and safety*, R.S.Q. c. S-2.1.

.4 *Safety Code for the construction industry*, S-2.1, r.4.

.5 Any other health and safety law or regulation applicable based on corporate status or context of Work.

1.4 SUBMITTAL PROCEDURES

.1 Submit the notification of Worksite opening.

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

.3 Submit to the Departmental Representative work site/workplace-specific prevention program, as described in Article 1.9 – Health and Safety Management below, minimum 10 days prior to start of work. Contractor must subsequently update its prevention program if work differs from initial plans. The Departmental Representative may, following receipt of program and at any time during Work, require that program be modified or supplemented to better reflect reality of work site/workplace, in which case Contractor must make required changes before beginning work.

.4 Submit to the Departmental Representative Work site/workplace inspection grid duly completed at frequency indicated in Article 1.13 – Inspection of Workplace and Correction of Hazardous Situations below.

.5 Submit to the Departmental Representative, within 24 hours, a copy of all inspection reports, notices of correction or recommendations from federal or provincial inspectors.

.6 Submit to the Departmental Representative, within 24 hours, investigation reports for all accidents with injury and incidents that bring to light a potential risk.

.7 Submit to the Departmental Representative all material safety data sheets for controlled products used at work site/workplace minimum 3 days prior to their use at work site/workplace.

.8 Submit to the Departmental Representative copies of training certificates required for implementation of prevention program, including:

.1 Workplace first aid and cardiopulmonary resuscitation (CPR);

.2 Confined space entry;

.3 Lockout procedure;

.4 Wearing and adjusting personal protective equipment;

.5 Any other training required by law or prevention program.

.9 Medical examinations: when medical examinations are required by law, regulation, direction or prevention program, Contractor must:

.1 Submit to the Departmental Representative, prior to mobilization, medical examination certificates for its supervisory staff and all its employees who will be present at opening of work site/workplace;

.2 Subsequently submit as available and without delay medical examination certificates for all of employees new to work site/workplace.

.10 Emergency Plan: Emergency Plan, as described in Article 1.9 – Health and Safety Management, must be submitted to the Departmental Representative with prevention program.

.11 Work permit: Contractor must obtain all necessary municipal, provincial and federal work permits in accordance with Contract. A copy of permit applications must be duly sent to the Departmental Representative.

.12 Plans and certifications of compliance: Contractor must submit to the Departmental Representative 1 copy of work methods, plans and certifications signed and sealed by a registered and practicing engineer in the following cases:

.1 Any modifications to equipment or machinery that have not been authorized in writing by manufacturer. One copy of documents must remain available at all times at work site/workplace.

.2 Shoring.

.13 CSST conformity certification.

1.5 RISK ASSESSMENT

.1 Contractor must identify risks related to each task performed at work site/workplace.

.2 Contractor must plan and organize work so as to encourage elimination of hazards or collective protection and thereby reduce to a minimum need for personal protective equipment.

.3 Protection equipment, tools and materials that cannot be used or installed without endangering the health and safety of workers or public are deemed inadequate for work to be completed.

.4 All mechanical equipment must be inspected prior to arriving at work site / workplace. Contractor must submit to the Departmental Representative, prior to use of equipment, certificate of compliance signed by a qualified mechanic. The Departmental Representative may, at any time, if they suspect a defect or risk of accident, order immediate stoppage of equipment and a second inspection by a specialist of their choice.

1.6 MEETINGS

.1 An authorized and qualified representative of the Contractor shall attend all meetings when it comes to health and safety on the work site/workplace.

.2 The Contractor shall establish a work site committee and hold meetings every two (2) weeks. This committee must include at least one authorized and qualified representative of the Contractor, the site supervisor the Departmental Representative and one worker for each discipline or activity sector. The committee's role is to see to the implementation of the Prevention Program and ensure that measures are taken to quickly correct any situation that could cause an accident or compromise the health of the workers. Minutes of meeting should be written for each of these meetings.

1.7 REGULATORY REQUIREMENTS

.1 Comply with all laws, regulations and standards applicable to the execution of the Work.

.2 In particular, Contractor must present in his work Plan and Emergency Plan all measures related to the work in a marine environment (presence of life boats, life jackets, floats, grab poles, etc.).

1.8 PROJECT/SITE CONDITIONS

.1 At Work site / workplace, Contractor must keep in mind following:

.1 Hazards associated with loading, handling and collision of floating equipment as well as manual work in proximity to hydraulic shovel or involving live cable during dredging work;

.2 Hazards associated with possible spill of petroleum products in ocean and spill confinement operations.

.3 Drowning hazards

.1 For all work involving drowning hazards, following requirements must be met:

.1 Comply with section 2.10.13 of *Safety Code for the construction industry*.

.2 (a) Wear a life jacket or floatation device in accordance with:

- Canadian General Standards Board (CGSB) standard CAN/CGSB-65.7-M88, Lifejackets, Inherently Buoyant Type published in 1988.
- Or for some exceptions, be approved by Transport Canada.

(b) Or be protected by a safety net or fall protection device.

.3 Obtain and submit to the Departmental Representative a letter of compliance issued by Transport Canada for approval of all boats (transportation, rescue, inspection or other) prior to beginning of Work.

.4 Ensure that a moored, water-bound rescue boat is available for each Work station. When boat is accessible from land, boat may serve multiple Work stations on condition that distance between each station and boat is less than 100 m.

.5 Ensure that boat has features necessary to accommodate people likely to participate in rescue operation.

.6 Ensure rescue boat is always available to workers in case of emergency.

.7 Ensure that a qualified person is available to operate emergency equipment. This person must have their Pleasure Craft Operator Card for length of boat used.

.8 Develop written emergency procedures that contain information mentioned below and ensure that all workers affected by procedures have received training and information necessary to implement them:

- Complete description of procedures, including responsibilities of individuals granted access to workplace;
- Location of emergency equipment.

.9 When workplace is a pier, basin, jetty, quay or other similar structure, a ladder having minimum 2 steps under water must be installed every 60 m on front of structure. This measure also applies to construction projects, in which case temporary (or portable) ladder may be used and removed at end of work if Owner does not have basic facilities.

.4 Fall hazards during the building of the new wharf or excavation works.

.5 Hazards associated with the exploitation of a quarry, transportation and placing of large calibre stones.

.6 Hazards associated with carrying out the work in proximity to an operating wharf.

1.9 HEALTH AND SAFETY MANAGEMENT

.1 Contractor must accept and assume responsibility for all tasks and obligations normally delegated to Principal Contractor and Employer under applicable occupational health and safety laws and regulations.

.2 Contractor must develop a prevention program for construction work site / workplace that is based on identifying risks and implementing program from beginning of project through final step of demobilization. Prevention program must take into account information in Article 1.8 – Project/Site Condition and must be distributed to all individuals concerned in accordance with provisions of Article 1.4 – Submittal Procedures. At minimum, prevention program must include:

.1 Corporate health and safety policy;

.2 Work description, schedule and expected flow of workers;

.3 Organizational diagram of health and safety responsibilities;

.4 Physical organization of Work site/workplace;

.5 First aid standards;

.6 Identification of risks related to work site/workplace;

.7 Identification of risks related to tasks performed, including preventative measures and implementation procedures;

.8 Training required;

.9 Procedure in case of accident/injury;

.10 Written commitment from all personnel to abide by prevention program;

.11 Work site/workplace inspection grid based on preventative measures contained in program.

.3 Contractor must develop an effective Emergency Plan in relation to features and constraints of work site/workplace and its environment. Emergency Plan must be distributed to all individuals concerned in accordance with Article 1.4 – Submittal Procedures. Plan must include in particular:

.1 Emergency evacuation procedure;

.2 Identification of resources (police, fire, ambulance, etc.);

.3 Identification of individuals responsible at Work site / workplace;

.4 Identification of first aid people;

.5 Training required for people responsible for Plan implementation;

.6 All other information deemed necessary considering features of Work site / workplace.

1.10 RESPONSIBILITIES

.1 Regardless of size of work site/workplace or number of workers present, Contractor must name a qualified person as supervisor and person responsible for health and safety. Take all measures necessary to ensure health and safety of people and goods on site and in environment surrounding work site / workplace that could be affected by performance of certain work.

.2 Take all measures necessary to ensure implementation of and compliance with health and safety requirements in Contract Documents, applicable federal and provincial regulations, standards and construction work site/workplace-specific prevention program, and comply with all orders or notices of correction from an inspector without delay.

.3 Contractor must take all measures necessary to keep work site/workplace tidy throughout work.

.4 Designate a security agent if required by law.

1.11 COMMUNICATION AND POSTING

.1 Take all measures necessary to ensure effective communication of health and safety

information at work site/workplace. Upon arrival at work site/workplace, all workers must be informed of details of prevention program and their rights and obligations. Contractor must stress workers' right to refuse Work that they believe could compromise their own health, safety or physical integrity, or those of others at work site/workplace. Contractor must maintain and keep at work site/workplace a log detailing information shared, with signatures of all workers who received it.

.2 Information and documents below must be posted in a location easily accessible to workers:

.1 Identification of Employer and Principal Contractor;

.2 Corporate occupational health and safety policy;

.3 Work site/workplace-specific prevention program;

.4 Emergency Plan;

.5 Material safety data sheets for all controlled products used at work site/workplace;

.6 Minutes of job-site committee meetings;

.7 Names of representatives on job-site committee;

.8 Names of first aid people;

.9 Intervention and correction reports from inspectors.

1.12 UNFORESEEN HAZARDS

.1 When a hazard not specified in specifications and not identified during initial work site/workplace inspection appears because of or during performance of work, Contractor must immediately stop work, implement temporary protective measures for workers and public, and advise the Departmental Representative verbally and in writing. Contractor must subsequently make necessary changes to prevention program so that work may resume safely.

1.13 INSPECTION OF WORKPLACE AND CORRECTION OF HAZARDOUS SITUATIONS

.1 Inspect workplace and complete work site/workplace inspection grid at least once per week.

.2 Take, without delay, all necessary measures to correct non-compliance with laws and regulations and dangerous situations identified by Departmental Representative.

.3 Submit to the Departmental Representative written confirmation of all measures taken to correct non- compliance and dangerous situations.

.4 Work stoppage: Contractor must designate one person hired solely for health and safety. This person's candidacy must be approved by the Departmental Representative. Give person hired by Contractor to be responsible for health and safety all authority necessary to stop and resume work when they deem it necessary or desirable for reasons of health and safety. This person must ensure health and safety of public and work site/workplace personnel as well as environmental protection always take precedence over issues related to cost and Work schedule. Without limiting scope of Health and Safety Management article and Responsibilities article, the Departmental Representative may, at any time, stop work if they perceive a hazard or risk to

health and safety of work site/workplace personnel or public, or for environment.

1.14 BLASTING

.1 Blasting and other use of explosives are prohibited on the work site.

1.15 SECURITY

.1 Provide and pay for responsible security personnel to guard site and contents of site after working hours and during holidays.

1.16 SPECIFIC REQUIREMENTS FOR SAFETY

.1 Protective Equipment

.1 All workers at work site must wear at all times certified safety helmet, safety shoes, and safety vest as well as safety goggles.

.2 All visitors during work site hours must wear at all times certified safety helmet, safety shoes, and safety vest as well as safety goggles.

.3 Additionally, all other personal protective equipment is required according to type of work. Safety standards must be strictly applied as recommended in Regulation S-2.1, r4.

.2 Prohibited at work Site

.1 Personal stereo headset

.2 Alcoholic beverages or drugs (or being under influence of)

.3 Tobacco

.4 Chewing gum

.5 Gambling

.6 Firearms

.7 Theft, vandalism

.8 Fighting

.9 Fire at work site / workplace

.10 Any person who fails to respect prohibitions mentioned will be expelled from site without further notice.

.3 Non-Smoking Policy

.1 Smoking is strictly PROHIBITED on site.

.4 Handrails, Temporary Openings and Danger Zones

.1 Contractor is responsible for building, modifying and replacing fall protection devices (misconduct in this regard will not be tolerated).

.2 Danger zones for workers must be identified with red or yellow tape marked “Danger.” This procedure is to be used indoors, i.e. in spaces completely closed off by walls, floor and ceiling. For danger zones located outdoors, delimit area using yellow nylon cord with coloured strips tied on every 4 m sufficiently well so as not to come undone. Coloured strips must correspond to requirements of Work concerned.

.3 All material that can be picked up by wind must be sufficiently tied down or stored in closed containers.

.5 Cleaning

.1 It is important to keep Work site tidy at all times, dispose of rubbish daily and hang hoses and extension cords. Once per week, a major clean-up by Contractor and its subcontractors is required.

.6 Injuries and Accidents

.1 Contractor and each subcontractor must designate a first aid person before work begins.

.2 Any accidents or close-calls must be reported to immediate supervisor, who must notify the Departmental Representative.

.3 A first aid kit is required in each of Contractor’s trailers.

.7 Traffic Protection

.1 Contractor must be sure to have at all times a flag person to back up dump trucks and any other delivery vehicles.

.8 Fire Protection

.1 Contractor must:

.1 Provide own ABC type extinguishers;

.2 Inspect its equipment regularly;

.3 Equip Work site trailers and dredging equipment with extinguishers;

.4 Check pressure of extinguishers once per year.

.9 Confined Spaces

.1 Work and equipment must comply with applicable codes and standards. Ensure that occupational health and safety regulation applicable to confined spaces is complied with, particularly sections 3.21.1, 3.21.2 and 3.21.3 of Safety Code for the construction industry (R.R.Q., c S-2.1, r 4).

.2 Measure contaminant concentration in manholes. While taking measurements in manholes, respirator choice must be in accordance with CSA-Z94.4.93.

.10 Environmental Procedures

.1 Employers and workers must comply with all laws, regulations and codes issued by different levels of government.

.2 Prior to mobilization at Work site, Contractor must submit to the Departmental Representative a complete list of contaminants to be used at Work site, with WHMIS material safety data sheets.

.3 Work must be performed so as to avoid spilling solid or liquid waste, fuel, lubricant or other substances on ground or in surface water in accordance with provisions of laws and regulations.

.4 When worker or any other individuals at Work site notice presence of a contaminant on ground in environment, they must notify their immediate supervisor. The Departmental Representative must be notified as soon as possible. A report from a site certified by the Ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques for decontamination must be subsequently provided to the Departmental Representative by Contractor responsible.

.5 Salvaging, cleaning and pumping of spills will be at expense of Contractor and to satisfaction of the Departmental Representative or its authorized representatives.

.6 See Section 01 35 43 for more information about environmental protection.

.11 Temporary Marking

.1 All water structures and equipment must be marked during work period.

PART 2 PRODUCTS

2.1 NOT USED

Not used.

PART 3 EXECUTION

3.1 NOT USED

Not used.

END OF SECTION

Maintenance and Inspection Work of Maritime Structures – H&S Section

General

By accepting this contract, the Contractor agrees to assume all the responsibilities normally assigned to the employer and the prime contractor under the *Loi sur la santé et la sécurité du travail* (S-2,1) (Health and Safety at Work Act) Before starting work, the Contractor shall:

- Regardless of the number of workers assigned to work, transmit to Departmental Representative a safe work plan (mini prevention program) and a certificate of mechanical inspection of machinery used at the site, if any.
- Ensure that its workers have received the training and information necessary to perform the work safely and that all required tools and protective equipment are available, meet the standards, laws and regulations.
- Comply at all times with the provisions of the la *Loi sur la santé et la sécurité du travail* (S-2.1) (Health and Safety at Work Act), the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety Code for the construction work) and the *Règlement sur la santé et la sécurité du travail* (S-2.1, r.13) (Health Regulations and safety) where applicable.
- Inform its employees of their right to refuse work that is dangerous to their health or safety.
- Identify and barricade work area and control access to it.
- If the case of an unexpected incident, take all necessary measures, including stopping work, to protect the health and safety of workers and the public and immediately contact the Departmental Representative

Diving Operation

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

- 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.
- 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).
- 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)
    - 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;

- the workplace first-aid training certificate of each member of the dive team;
- the medical certificate of each member of the dive team;
- 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):
  - the thermal protection to be used;
  - the repetitive dive factor;
  - the no-decompression limit;
  - the circumstances in which the dive must be terminated;
  - the procedures to be followed to ensure that machinery, equipment or devices that could create a hazard have been locked out;
  - the decompression table to be used, as required;
- 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.

- The Contractor shall take into account the following specific characteristics of the worksite, and adapt its dive plan accordingly :
  - All restrictions described in the related section.
  - Diving in the marine waterways of a ferry or other users of the commercial wharf.
  - Diving under ice when imposed by the Contractors schedule.
- Where the dive takes place at one of the following locations, provide the Departmental representative confirmation that the authorities concerned have been notified:
  - upstream or downstream from a hydraulic structure or submerged water line;
  - in marine waterways;
  - in port facilities.
- If the dive station is more than 2 metres above the water, provide the Departmental representative:
  - 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;
  - a drawing of the device used to hoist the stage or other device, unless that device is a crane or boom truck.
- If the dive is carried out from a vessel, provide the Departmental representative the following documents:
  - proof of qualification of the vessel operator;
  - the vessel's certificate of compliance from Transport Canada.
- 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).
- 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.
- 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.).
- Comply to requirements of article 355 to 357 of Règlement sur la santé et la sécurité du travail

(Regulation respecting occupational health and safety) for all people working on the present contract at the water's surface.

- In the case of an emergency vessel required to respect article 357 of Règlement sur la santé et la sécurité du travail (Regulation respecting occupational health and safety), obtain a Transport Canada issued conformity certificate for the vessel, and transmit it to the Departmental Representative.

Work Near Bodies of Water

- For all work done near a body of water (such as work above water, work on a wharf, work on the edge of a watercourse, etc.), the Contractor must respect the requirement of the following paragraphs in addition to those in article 2.10.13 du Code de sécurité pour les travaux de construction (Safety code for the Construction Industry)..
- 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.
- If no other safety measure can protect the workers, ensure that they all wear a life jacket that is able to maintain their head out of the water and keep them afloat without any effort of the arms.
- Submit the following documents to the CSST and Departmental Representative before the beginning of the work:
    - Information about the work (dates of work, place, water body, description of work, etc.);
    - The list of vessels and work platforms used during the works, specifying their respective use.;
    - Proof that an evaluation and inspection was done by Transport Canada for each vessel or motorised or non-motorised platform;
    - A water transportation plan
    - The workers (if applicable);
    - rescue plan adapted to the work and to the characteristics of the body of water.

  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

- The Contractor must be able to demonstrate that the operator of each vessel has the knowledge and required abilities to accomplish his tasks safely.
- 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.
- 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

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.

- 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.

- 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.
- 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.
- 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:

- 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.
- Air extraction system with filters must be used for all welding and cutting work performed inside.
- Stop all activities producing flammable or combustible gas, vapors or dust in the vicinity of the welding or cutting work.
- Store all compressed gas cylinder on a fireproof fabric and make sure that the room is well ventilated.
- 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)
- Store the cylinders far from all heat sources.
- Not to store the cylinders close to the staircases, exits, corridors and elevators.
- 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.
- Check that welding equipment with electric arc has the necessary tension and are grounded.
- Ensure that the conducting wires of the electric welding equipment are not damaged.
- Place the welding equipment on a flat ground away from the bad weather.
- Install fireproof canvas when the welding work is done in a superposition and where there is the risk of falling sparks.
- Move away or protect the combustible materials which are closer than 15 metres from the welding work.
- Prohibition to weld or cut any closed container.
- 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:
  - they have been cleaned and air samples indicating that work can be done without danger has been taken; and
  - provisions to ensure the safety of the workers have been made.

MATERIAL LIFTING

- The Contractor must plan the hoisting operations in a way as to avoid that the loads pass over the occupied zones on the site
- The Contractor must transmit to the Departmental Representative a work plan, signed and sealed by an engineer, including, amonge other thing, the position of the crane, a sketch of the trajectory of the transported loads, the length of the boom and a lifting plan for the handling of load above occupied buildings.The Departmental representative can, if he deems necessary, require that the work be done at night or on weekends.
- All mobile cranes manufactured after January 1, 1980 must be equipped with a overload protection device.
- All mobile cable cranes manufactured after January 1, 1970, except those used for other purposes than lifting loads, must be equipped with a closed hoist protection device.
- For all lifting equipment the Contractor must transmit to the Departmental Representative a mechanical inspection certificat issued just before the delivery of the equipment to the worksiste.
- For all winch installations, the Contractor must transmitt to the Deparatmental Representative the manufacturer'srecommended installation process , or an installation process signed and sealed by an engineer. The installation process must take into account the maximum admissable charges, the number, the weight and the location of the counterweight and all other detail which can affect the capacity and the stability of the equipment.
- 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.
- The entire lifting area shall be marked off to prevent the entry of non-authorized persons.
- The Contractor must obtain all permits and pay all fees, if it is necessary to temporarity block the public roads, in respect of the preceeding paragraph or for any other reason concerning saftey of workers, occupants or the public.
- The Contractor shall carefully inspect all of the slings and lifting accessories and make sure that those in poor condition are destroyed and disposed of.Compressed-gas cylinders shall be lifted with a basket specially designed for this purpose

FALL PROTECTION

- The Contractor is responsable for having fall protection for any person working who is exposed to a risk of falling more than 2.4 m.
- 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.
- Every person using an elevating platform (scissors, telescopic mast, articulated mast, rotative mast, etc.) must have a training regarding this equipment.
- The use of a safety harness is mandatory for all elevating platforms with telescopic, articulate or rotative mast.
- Define the limits of the danger zone around each elevating platform
- Everyone who works within three metres from the edge of a roof 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 within 900 mm to 1100 mm around the perimeter of the roof.

PART 1 – GENERAL

1.1 RELATED SECTIONS

.1 Section 01 11 00 – Summary of Work

.2 Section 01 14 00 – Work Restrictions

.3 Section 01 52 00 – Site Facilities

.4 Section 35 20 23 – Dredging

.5 Section 35 20 23A – Management of Dredged Materials

1.2 DESCRIPTION

.1 This section describes the environmental requirements related to the Project. The Contractor is responsible for complying with requirements at all times during performance of the work stated in these specifications.

.2 Other sections may also contain specific requirements regarding environmental protection. These specific requirements are in addition to those set out in this section. In the event of a discrepancy, the most restrictive requirement shall prevail.

1.3 DEFINITIONS

.1 Environmental pollution and damage: presence of chemical, physical or biological elements or agents that adversely affect human health and welfare, unfavourably alter ecological balances of importance to human life, affect other species of importance to humans, or degrade the environment aesthetically, culturally or historically.

.2 Environmental protection: prevention/control of pollution and habitat or environment disruption during construction. Control of environmental pollution and damage requires consideration of land, water, air, and biological and cultural resources and includes management of visual aesthetics, noise, solid, chemical, gaseous and liquid waste, radiant energy and radioactive material as well as other pollutants.

.3 MDDELCC: Ministère du Développement Durable, de l'Environnement et de la Lutte contre les Changements Climatiques [Quebec department of sustainable development, environment and climate change]

.4 Invasive species: a species alien to the ecosystem where it is found, but able to breed and likely to have harmful effects on the economy, the environment or human health. This kind of nuisance includes, in addition to plants, some animals, fungi and microorganisms that are also a threat to biodiversity.

1.4 REFERENCES

.1 *Environment Quality Act* (CQLR, c. Q-2)

.2 *Regulation respecting hazardous materials* (Q-2, r. 32)

.3 *Regulation respecting solid waste* (Q-2, r. 13)

.4 *Regulation respecting the burial of contaminated soils* (Q-2, r. 18) *Regulation respecting contaminated soil storage and contaminated soil transfer stations* (Q-2, r. 46)

.5 *Act respecting the conservation and development of wildlife* (CQLR, c. 61.1)

.6 *Regulation respecting wildlife habitats* (c. 61.1, r. 18)

.7 *Fisheries Act* (R.S.C., 1985, c. F-14)

.8 Lignes directrices relatives à la gestion du bois traité [treated wood management guidelines] (MDDELCC, October 2011)

.9 Politique de protection des sols et réhabilitation des terrains contaminés [soil protection and contaminated land recovery policy] (MDDELCC, 2001)

.10 Critères de qualité de l'eau de surface [surface water quality criteria] (MDDELCC, 2013)

.11 Étude de caractérisation environnementale, projet de réaménagement du Grand quai de Blanc-Sablon [environmental characterization study: redevelopment of the Blanc-Sablon wharf] (SNC-Lavalin 631672-0000-4PER-0002, March 2016)

.12 Rapport d'évaluation des effets environnementaux – Revitalisation du havre au quai des Pêcheurs de Blanc Sablon [environmental impact assessment report – Blanc-Sablon wharf harbour revitalization] (SNC-Lavalin).

1.5 CONTRACTOR'S OBLIGATIONS

.1 SCH-DFO holds environmental permits for the planned work. The Contractor shall comply with the requirements of the conditions associated with each environmental permit.

.2 The work shall be completed to the satisfaction of the Departmental Representative regarding standards and environmental protection regulations. The Contractor shall comply with the environmental guidelines in this analysis; this shall include the costs associated with these requirements.

.3 The Contractor shall ensure that its work complies with:

.1 municipal, provincial and federal environmental authority legislation and regulations;

.2 the requirements set out in this specification;

.3 the requirements of the conditions associated with each of the environmental permits;

.4 the other standards and guidelines that may be established by the supervisor designated by the Departmental Representative.

.4 In the event of work not planned and stated in the environmental permits, the Contractor shall, in addition to notifying and obtaining the consent of the supervisor designated by the

Departmental Representative, obtain from the organizations concerned the authorizations and permits necessary to complete its work. Costs and delays related to compliance and enforcement of the

.5 Environmental requirements contained in these authorizations and permits shall be provided and borne entirely by the Contractor.

1.6 ENVIRONMENTAL CONSTRAINTS

.1 Constraints to comply with during dredging operations, demolition of the seaplane dock and the wharf; construction of the slipway and the route; the compensation project and construction of the breakwater.

.1 The Contractor shall develop its work schedule and its completion methods to avoid causing sediment and soil resuspension during the capelin migration period (between May 16 and July 15) and during the nesting period (mid-May to end July).

.2 Do not approach a seabird or aquatic bird colony during breeding season; keep within more than 300 m of these colonies.

.3 If responses are planned below higher high water large tide, perform them when the work area is dewatered and stabilize the site before the tide comes back in.

.4 The turbidity curtain required during sediment dredging at the wharf shall be compliant with the requirements in section 3.2.

.5 To prevent sediment resuspension, place the rocks on the seafloor instead of dropping them from the surface.

.6 Reduce the dredging duration to its minimum.

.7 Limit the work to the suitable tidal cycle.

.8 Use a clamshell with reasonable leak-proof jaws.

.9 Open the clamshell jaws near the seafloor to dump the materials.

.10 No debris from structure demolition shall be thrown into the water. Any accidental spillage or dumping of material shall be corrected as soon as possible.

.11 Do not brush, clean or cut treated wood over water or near ecologically sensitive areas.

.2 Use a hydraulic breaker.

.1 Using a hydraulic breaker to break the rock shall be prohibited when a marine mammal or a Leatherback Turtle is observed within a 200-m radius of the work area.

.2 No dynamiting is permitted.

.3 Conduct rock excavation over a maximum period of 12 hours per day to allow for a recovery period of 12 continuous hours overnight with no additional noise in the aquatic environment.

.4 Soil and sediment management

.1 Contaminated sediment and soil that falls under level A-B of the MDDELCC criteria shall

be managed in accordance with section 35 20 23 A – Sediment Management.

.2 Install a sediment curtain during dredging of contaminated sediment at the base of the wharf.

.3 Store the contaminated sediment and soil in such a way that drainage water can be recovered in a watertight retention system.

.4 Place a canvas on the drying area for dumping the dredged sediment.

.5 Install a filtration system that can effectively keep sediment in the water in the drying basin.

.6 Store the sediment over 30 m from the shore to prevent it from being spread by the wind.

.5 Manage creosote-treated wood from the seaplane dock, the slipway and the wharf.

.1 Wood from the demolition of these items is not considered a hazardous material. However, it cannot be placed in an engineered landfill given that its concentration of certain contaminants exceeds the *Regulation respecting solid waste* criteria that are applicable to this type of site;

.1 it also cannot be reused as construction material or otherwise, as stated in the MDDELCC treated wood management guidelines

.2 or placed in a treatment centre and/or a landfill authorized by MDDELCC to receive these materials. In the event that this happens, the Contractor shall provide proof of disposal at an authorized site.

.6 Surface water management

.1 The Contractor shall not store hazardous materials or residual hazardous materials in work areas or less than 30 m from the shoreline.

.2 The Contractor shall keep the premises clean and control suspended material heading for catch basins on Transport Canada land or toward the harbour.

1.7 NOTICE OF NON-COMPLIANCE

.1 A notice of non-compliance will be issued in writing by the supervisor designated by the Departmental Representative every time non-compliance with a law, regulation, federal, provincial or municipal permit, or other component of the environmental protection plan to be implemented by the Contractor is observed.

.2 After receiving a notice of non-compliance, the Contractor shall propose corrective measures to the supervisor designated by the Departmental Representative and shall implement them within a short period after approval from this supervisor.

.3 The Contractor shall await written approval from the supervisor designated by the Departmental Representative prior to implementing the proposed measures.

.4 If necessary, the supervisor designated by the Departmental Representative may order the cessation of work until satisfactory corrective action is taken.

.5 No extensions or adjustments shall be granted following a work interruption.

1.8 INVASIVE SPECIES

.1 Marine ecosystems are vulnerable to non-native or invasive species, especially when floating equipment is required for the work. To prevent invasive foreign species from being introduced into the natural ecosystem when work is being performed offshore using floating equipment, the following steps shall be taken. The risks of introducing non-native species will be minimized through the use of marine equipment that is clean and stored on land prior to performance of the work. Regarding such equipment, the Contractor shall provide to the Departmental Representative in writing a list of equipment, place of storage, and planned date for putting into water. The Departmental Representative must be able to verify that the equipment was properly cleaned and stored on land prior to the work.

.2 Regarding all equipment that is already in the water, the Contractor shall demonstrate, at its own expense, that the floating equipment is free of invasive species when it is moved to the work site. Therefore, the Contractor shall provide a written inspection report immediately before moving equipment to the work site certifying that it is free of invasive species. The inspection report shall be prepared by a biologist qualified to identify benthic fauna. Sampling shall be carried out by divers. The report shall include, but not be limited to, the following information: list of equipment inspected (tugboats, scows, etc.), date and place of inspection, summary of sampling and identification protocols, list of samples, table of results, and statement attesting to the presence or absence of invasive species. The report shall include photographs and be signed by the certified biologist prior to submission to the Departmental Representative along with the other required contract documents before the equipment can be moved in.

.3 If the inspection report confirms the existence of invasive species, the Contractor is required to replace or fully clean the equipment at its expense. A description of the cleaning work shall be included in the next inspection report (following the cleaning), along with all of the relevant information identified above.

.4 The Departmental Representative reserves the right to obtain a second opinion at any time. If any invasive species are observed, the Contractor shall stop the work and clean the equipment at its expense, following the above-mentioned procedure.

1.9 TRANSPORTATION BY FLOATING EQUIPMENT

.1 If it approaches a marine mammal, the floating equipment shall slow down to avoid hitting it.

PART 2 – PREPARATION

2.1 DOCUMENTS/SAMPLES TO SUBMIT FOR APPROVAL/INFORMATION

.1 Data sheets

.1 Submit the required technical file sheets and/or datasheets and the manufacturer's instructions and documentation regarding hazardous materials used on site. The data sheets shall include product characteristics, performance criteria, physical size, limitations

and finish.

.2 Before commencing construction activities or delivery of materials to site, the Contractor shall submit an environmental protection plan to the supervisor designated by the Departmental Representative or to his or her representative for environmental matters for review and approval.

.3 The plan shall provide a comprehensive overview of known or potential environmental issues to be resolved during construction and the applicable protective measures for mitigating environmental impacts.

.4 The actions included in the environmental protection plan shall be presented with a degree of detail that is consistent with the environmental issues and with the construction work to be performed.

.5 The environmental protection plan shall include:

.1 The names of the persons responsible for ensuring compliance with the plan.

.2 The names and qualifications of the persons responsible for manifesting residual hazardous materials to be removed from the site.

.3 The names and qualifications of the persons responsible for training site staff.

.4 A description of the environmental protection staff training program.

.5 An erosion control and sediment transportation plan identifying the measures to be implemented, including monitoring and report requirements to ensure that these measures are in compliance with federal, provincial and municipal acts and regulations. A prevention plan for storm water pollution may replace the plan for erosion control measures and sediment transportation.

.6 Drawings indicating the location of temporary excavations or embankments for haul roads, stream crossings, materials, structures, sanitary facilities, and stockpiles of excess or spoiled materials; drawings illustrating methods to control runoff and to contain materials on site.

.7 Traffic control plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. These plans shall include measures to minimize the transportation of materials on public roads by vehicles or runoff.

.8 A work area plan showing the planned activities in each part of the work area and indicating areas of limited use or prohibited use. This plan shall include measures for marking the limits of use areas and methods for protection of feature to be preserved within authorized work areas.

.9 Spill emergency plan that shall include procedures to use, instructions to follow, and reports to submit in the event of an unforeseen spill of regulated substances.

.10 Non-hazardous, hazardous, or special solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.

.11 Air pollution control plan detailing measures to ensure that dust, debris, materials, and residual materials are contained on the project site.

.12 Contaminant prevention plan identifying potentially hazardous substances to be used on site, intended actions to prevent introduction of these substances into the air or ground and detailing measures to be taken to store and handle these substances in compliance with federal, provincial, and municipal legislation.

.13 Wastewater management plan identifying methods and procedures for management or discharge of wastewater coming directly from construction activities (e.g. concrete curing water, cleanup water, dewatering of groundwater, disinfection water, hydrostatic test water, and water used in flushing of lines).

2.2 FIRES

.1 Fires and burning of rubbish and woody residues on site are not permitted.

.2 Provide supervision and fire protection measures as directed.

2.3 DRAINAGE

.1 Provide the temporary drainage and pumping required to keep the excavations and the site free from water.

.2 Runoff water in the work areas shall be confined, sampled and treated, if required.

.3 Runoff water in the work areas shall be pumped in a terrestrial environment to a vegetation area to allow for settling of suspended materials.

.4 Ensure that water pumped to a watercourse, a sewage network or a drainage evacuation system is compliant with the MDDELCC surface water quality criteria (protection of aquatic life – acute effect) for suspended materials, pH, metals, PAHs, pentachlorophenols, and C10-C50 before it is discharged into the environment. The Contractor shall obtain authorization from the Departmental Representative in environmental matters before discharging anything into the environment.

.5 If applicable, ensure that water containing suspended or harmful materials is disposed of in accordance with local authorities' requirements.

PART 3 – EXECUTION

3.1 WORK ADJACENT TO WATERWAYS

.1 Do not skid logs or construction materials across waterways.

.2 Avoid indicated spawning beds when constructing temporary crossings of waterways.

.3 Before commencing activities, the person in charge of the site shall identify an area for machinery maintenance and for hazardous materials handling. This site shall be at least 30 m from a watercourse or other water body.

.4 Construction machines shall not be used less than 30 m from any watercourse. However, use of construction machines with a vegetable oil hydraulic system (biodegradable) is permitted for work in water or in areas less than 15 m from it.

.5 Watercourses shall be kept free of excavated fill, waste material, and debris.

.6 Any debris accidentally dumped into an aquatic area shall be removed as soon as possible.

.7 If necessary, sediment and soil to be temporarily stored on the shoreline shall be dewatered before being placed there. The method of drying (dewatering) using a temporary filtration basin shall be preferred. It involves use of a temporary basin mounted on metal structures, adjustable to the desired volume, and equipped with a geomembrane that acts as a filter to dewater the sediment on canvases and be covered with them to ensure that they do not migrate to other environments. A sediment barrier must be installed at the foot of the temporary basins or of any other soil/sediment pile. Runoff water must be treated before it is discharged; otherwise, it must be disposed of in accordance with the rules in force.

3.2 PROTECTION OF WATERCOURSES AND WATER BODIES

.1 Work in watercourse

.1 The Contractor may not perform any work within the riparian strip defined in the Protection Policy for Lakeshores, Riverbanks, Littoral Zones and Floodplains, except for work planned in the project and approved in the environmental permits.

.2 If the Contractor has to use a turbidity curtain in accordance with section 1.6 – Environmental Constraints, this curtain shall comply with the following specifications:

.1 The vertical height of the curtain shall be adapted to the water depth and to potential fluctuations in water level so that it completely reaches the seabed.

.2 Is held by weights at the bottom of the water so as to follow the asperities.

.3 Is firmly anchored on the shore.

.4 Is clearly marked for safe navigation.

.5 The turbidity curtain must be cleaned when necessary during the work if the filtration membrane is clogged.

.2 Excavation work

.1 The banks created by excavation shall be stabilized by riprap to prevent their subsequent erosion. A geotextile membrane shall be used under the riprap to retain the sediments and shorelines that have been exposed. The stones used shall be washed and have a minimum size of 50–200 mm.

.2 In places where riprap is not planned, a silt curtain shall be used to cover the exposed soil and the land shall be seeded or sodded following the application of a thin layer of topsoil.

.3 Soil and sediment control

.1 The Contractor shall plan a network for draining the work areas and include measures to temporarily stabilize the stockpiling sites to prevent runoff of the water to the sea.

.2 The quality of the runoff from the dewatering of the stockpiled sediment shall be assessed before it is discharged into the sea.

.4 Definitive management of sediment and contaminated soil

.1 Refer to section 35 20 23A – Sediment management.

3.3 POLLUTION CONTROL

.1 Maintain the temporary erosion and pollution control facilities implemented under this Contract.

.2 Control emissions from materials and equipment in accordance with local authorities' requirements.

.3 Prevent sanding materials, dust generated, and other foreign matter from contaminating the air and the waterways beyond the area of application. Provide temporary shelters where indicated in accordance with the Departmental Representative's instructions.

.4 Cover residual materials with a canvas or a geogrid to prevent blowing dust and debris. Provide dust control for temporary roads.

.5 Surface wash water shall be confined to the work area and treated (if required) to ensure that it meets the MDDELCC surface water quality criteria (protection of aquatic life – acute effect) before discharge into the environment. The Contractor shall obtain permission from the Departmental Representative or from his or her representative in environmental matters prior to discharging anything into the environment.

.6 All necessary measures shall be taken to minimize the suspension and transport of fine particles. Any accidental concrete spills in the work area shall be cleaned up and any concrete residue shall be disposed of with construction waste in a site authorized for that purpose.

3.4 CLEANING

.1 Progress cleaning

.1 Clean in accordance with section 01 74 11 – Cleaning.

.1 Leave premises clean at end of each day.

.2 Ensure that public waterways and storm and sanitary sewers remain free of residual materials and disposed-of volatile materials.

.2 Final cleaning

.1 Remove surplus materials, residual materials, tools and equipment in accordance with section 01 74 11 – Cleaning.

.1 Sort residual materials in accordance with section 01 74 21 – Construction/Demolition Waste Management and Disposal and section

.3 Construction debris and residual materials shall be sorted and temporarily stored on site. Residual materials shall then be sent to sites duly authorized by the MDDELCC depending on their nature. Debris and residual materials disposal as well as choice of authorized sites shall be the responsibility of the Contractor selected by PWGSC to perform the work.

.4 All treated wood debris shall be temporarily stored in watertight containers and covered with a canvas sheet to prevent contamination of soil or river water. This debris shall be managed in accordance with the Lignes directrices relatives à la gestion du bois traité [treated wood

management guidelines] (MDDELCC, 2011). Leaching tests shall be conducted in winter 2016 to define the physico-chemical characteristics of the wood debris with regard to the various management criteria to consider. Reusing treated wood debris is preferred.

.5 Remove the recycling bins and boxes from the site and dispose of materials in the appropriate facilities. Proof of disposal in a location authorized by MDDELCC shall be submitted to the Departmental Representative.

3.5 EQUIPMENT, VEHICLES AND MACHINERY

.1 Site traffic

.1 Access road limits and work areas shall be clearly identified at the site. Machinery traffic must be limited to designated access roads and work areas, specifically within the diked work areas in water environments, as per the environmental permits.

.2 Fording watercourses is prohibited.

.3 Machinery and mobile equipment traffic is strictly prohibited within the 15-m protective strip on any watercourse or water body unless it is provided for in the environmental permits or prior permission has been obtained from the Departmental Representative or from his or her representative in environmental matters.

.4 The Contractor shall not leave any equipment or machinery less than 30 m from any watercourse or water body outside of working hours or during prolonged shutdowns of the work site unless it is provided for in the environmental permits or prior permission has been obtained from the Departmental Representative. If this is not possible, measures must be in place to protect the soil beneath the equipment or machinery during the entire above-mentioned period (e.g. containment tanks with a volume equivalent to at least 110% of the fuel tank for the equipment or the machinery).

.2 Machinery refuelling and maintenance

.1 Maintenance, refuelling and cleaning of machinery and equipment containing petroleum products shall be done at a site that is specially equipped for that purpose, where there is no risk of contaminating the soil or underground or surface water. This site shall be more than 30 m from the seashore. If it is not, the surface shall be waterproof and have the capacity to contain all hydrocarbons in the event of spills or leaks. These activities shall be performed under constant supervision.

.2 Oil changes for any mobile equipment must not be done on site; oil changes may be done only on for non-mobile equipment. When oil changes are done on non-mobile equipment, the Contractor shall have spill recovery equipment in place (such as a collection basin) or provide minimum protection for the soil (e.g. water-repellent absorptive mats).

.3 Used oil shall be recovered, placed in barrels, identified and disposed of along with residual hazardous materials with a recycler approved by the MDDELCC.

.4 Water used to wash equipment cannot be discharged directly into a watercourse, water body, or onto the ground. This water shall be sampled and treated (where necessary) to meet the MDDELCC surface water quality criteria (protection of aquatic life – acute effect)

for suspended materials, pH and CID-CS0 before being discharged into the environment. The Contractor shall obtain permission from the Departmental Representative or from his or her representative in environmental matters prior to discharging anything into the environment.

.5 Equipment used shall, at all times, be in proper operating condition, clean and leak-free. Otherwise, it shall be immediately removed from the site. Machinery that is less than 15 m from a watercourse shall use biodegradable vegetable hydraulic oil.

3.6 PROTECTION OF THE FAUNA

.1 Refer to section 1.6 – Environmental Constraints.

.2 The Contractor shall comply with the requirements of the *Environment Quality Act* (CQLR, c. Q-2), the *Act respecting the conservation and development of wildlife* (CQLR, c. C-61.1) and the *Fisheries Act* (R.S.C., 1985, c. F-14) and also comply with the requirements associated with each of the environmental permits affecting wildlife habitats and species requiring protection.

.3 Aquatic vegetation zone

.1 The Contractor shall limit excavation in aquatic vegetation zones to authorized and necessary areas. It shall also keep removal of aquatic vegetation to a minimum.

.4 Withdrawal of water from the sea

.1 Withdrawal of water from the sea is authorized for only the exclusive needs of this project.

.2 The Contractor shall comply with the provisions governing the pumping of water from fish habitat that are stated in the *Regulation respecting wildlife habitats* (C-61.1, r. 18). It shall notify the Departmental Representative at least 16 days before the planned start of pumping.

.3 If the Contractor has to arrange the withdrawal of water, it shall do so in accordance with Fisheries and Oceans Canada requirements (i.e. install a screen to prevent fish from being entrapped). Design and installation of the fish screens at the entrances to freshwater intakes are described on the Fisheries and Oceans Canada Web site.

.4 The Contractor shall, as much as possible, limit the daily volume of water pumped into the sea.

3.7 PROTECTION OF AIR QUALITY

.1 No particulate or dust emissions will be tolerated at the job site beyond the standards set out in the *Clean Air Regulation* (Q-2, r. 4.1) (i.e. dust visible more than 2 m from the source).

.2 The Contractor shall:

.1 Avoid idling any vehicle, equipment or machinery when they are not being used.

.2 Immediately repair any equipment or machine that produces excessive exhaust emissions.

.3 Keep equipment anti-pollution systems in proper running order.

3.8 NOISE PROTECTION

.1 The Contractor shall control sound levels from the site by applying the following measures:

.1 Plan noisy work during regular working hours and in compliance with municipal requirements (i.e. between 7 a.m. and 7 p.m.).

.2 Machinery, equipment and any vehicles shall be equipped with functioning mufflers at all times.

.3 The slamming of dump truck back panels must be avoided at all times.

.4 Give preference to use of equipment that generates low noise levels.

3.9 MANAGEMENT OF HYDROCARBONS AND HAZARDOUS MATERIALS

.1 Petroleum products and any other hazardous materials shall be stored more than 30 m from any watercourse. These products shall be stored in dedicated areas and confined. Hazardous materials shall be stored in accordance with the provisions of the *Regulation respecting hazardous materials* (Q-2, r. 32).

.2 Stationary equipment and machinery (such as generators, compressors, etc.) located on the shore or in dewatered work areas shall be equipped with hydrocarbon collection basins to catch any leaks or spills (volume equivalent to at least 125% of the volume of the equipment's or machinery's fuel tank). These basins shall be kept operational at all times.

.3 The Contractor shall provide the Departmental Representative or his or her representative in environmental matters with the data sheet for the products that it intends to use at least 48 hours before it arrives at the site.

.4 New hazardous materials must not be discarded. Upon completion of the work, the Contractor shall take back its unused hazardous materials and leave the site completely clean.

.5 Hazardous waste shall be disposed of at a site duly authorized by the MDDELCC.

3.10 SPILL MANAGEMENT AND PREVENTION

.1 In case of an environmental incident, the Contractor shall immediately notify the Departmental Representative and comply with the following rules:

.1 Control all leakages.

.2 Contain the spill.

.3 Collect the contaminants and the contaminated materials.

.4 Prepare a detailed incident report including description and location of the accident, product and quantity spilled, date and time of incident, and the name and telephone number of the person who noticed the accident.

.2 In case of an environmental incident, the Contractor is responsible for immediately contacting the authorities (Urgence Environnement and Environment Canada) upon becoming aware of the event. The incident must be immediately reported to Environment Canada's emergency line (1-

866-283-2333), the Coast Guard alert network (1-800-363-4635), MDDELCC (1-866-694-5454) and the site supervisor.

.3 The Contractor is responsible for covering all costs for decontamination and disposal of soil contaminated following a spill or leak of a contaminant directly or indirectly from its activities. The Contractor shall dispose of this contaminated material at a site duly authorized by the MDDELCC. Proof of disposal shall be sent to the Departmental Representative.

.4 It is forbidden to mix contaminated soil with clean soil or with less contaminated soil or material in order to have a less restrictive way of disposing of the contaminant.

.5 The Contractor shall permanently keep a sufficient number of emergency petroleum product recovery kits at the site. The kits shall include sufficient absorbent material to allow for rapid and effective intervention on water and on land. These kits shall be easily accessible at all times to allow for rapid response in any area of the site. Workers who could potentially need to use these kits shall be given the appropriate training. The on-site location of the kits shall be provided to the Departmental Representative.

3.11 TEMPORARY SANITARY FACILITIES

.1 The Contractor shall provide and maintain on site temporary sanitary facilities that are necessary for use by persons accessing the site and shall remove these facilities upon completion of the work.

.2 Wastewater from the temporary sanitary facilities shall be disposed of in accordance with the regulations in force and at a site authorized by the MDDELCC. Proof of disposal shall be submitted to the Departmental Representative.

3.12 MANAGEMENT OF CUT AND FILL

.1 Cut materials (sediment, stones, soil) shall be segregated according to their nature in anticipation of their potential reuse on the site.

.2 The cut soil included in the A-B range of the policy or inferior to A can be reused if it meets the technical requirements and the statements on the management of A-B soil that are contained in the policy. The wharves' rock and ballast material can be reused.

.3 Excess cut materials that will not be reused on the site shall be disposed of in accordance with the regulations in force and according to their contamination level. If necessary, written proof that they were accepted (proof of transport or anything else specifying the nature and quantity of the material) at a location authorized by the MDDELCC shall be submitted to the Departmental Representative.

.4 Fine material stockpiles shall be covered to limit erosion by the wind or by surface runoff. Sediment barriers shall be installed around all fine material stockpiles.

.5 Material stockpiles shall be covered with a thin layer of topsoil to speed up the recovery of vegetation.

.6 During excavation, the Contractor shall immediately report to the Departmental Representative any ground contamination discovered (visual signs or smell) before continuing the work.

.7 If, during the excavation work, visual or olfactory indications do not correspond to the anticipated contamination level, temporarily store this soil in a designated location on the site, perform the required analyses, and dispose of the soil according to its contamination level.

PART 4 – RESTORATION

4.1 SITE RESTORATION

.1 Upon completion of the shoreline work, all sediment retention devices (sediment barriers, turbidity curtain, etc.) shall be removed.

.2 Grass surfaces damaged by the work shall be sodded.

.3 All surfaces susceptible to erosion shall be covered with stones, sod, or coco runners. Only topsoil used on site and put aside or even certified seedless will be accepted.

4.2 RESTORATION WORK

.1 Work areas along the shore shall be dismantled.

.2 If the exposed surfaces cannot be stabilized immediately, temporary protective measures against soil erosion shall be put in place on the slopes until the final stabilization.

END OF SECTION

PART 1 GENERAL

1.1 CODES, STANDARDS AND OTHER DOCUMENTS

.1 The work must meet the applicable requirements of the standards (latest edition) of the Office of the Government of Canada standards (ONGC), the Canadian Standards Association (CAN/CSA), the National Building Code of Canada (NBCC), the American Society for Testing Materials (ASTM), the American Concrete Institute (ACI), the Terms of Reference and general specifications (CCDG) of the Ministry of Transport of Quebec and the other codes presented herein. The latest revised editions, until the date of the start of the bidding period, should be used. In case of differences between the requirements of different materials, the most stringent prevail

.2 During construction, when there is conflict between different regulations, the most stringent standards will be observed.

.3 At all times, when the specification refers to standards, it is understood that this will be the latest revised edition independent of editions currently designated.

.4 Meet or exceed requirements of:

.1 Contract documents.

.2 Specified standards, codes and referenced documents.

1.2 LAWS, REGULATIONS AND ORDERS

.1 The Contractor shall respect the rights and privileges of others and comply with all laws, regulations and orders federal, provincial and municipal. He must also see to it that employees by law or by fact, including subcontractors also comply.

.2 Permits and applicable approvals should be obtained by the Contractor before the work begins.

1.3 BUILDING SMOKING ENVIRONMENT

.1 Comply with smoking restrictions and municipal by-laws.

1.4 FEES, TAXES AND PERMITS

.1 The Contractor shall give all notices and obtain and pay all fees and building permits required for the excavation, construction, and other services as required or requested by the authorities having jurisdiction in the region.

.2 The Contractor will be liable for any damages and costs resulting from failure to obtain these licenses and permits.

PART 2 PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01 29 83 – Payment Procedures for Laboratory Services

.2 Section 01 33 00 – Submittal Procedures

.3 Section 01 35 43 – Environmental Protection

.4 Section 01 52 00 – Construction Facilities

.5 Section 01 74 11 – Cleaning

.6 Section 03 20 00 – Concrete Reinforcing

.7 Section 03 30 00 – Cast-In-Place Concrete

.8 Section 03 30 51 - Concrete for Wharf Deck

.9 Section 05 14 15 – Aluminum Gangway

.10 Section 05 50 00 – Metal Fabrications

.11 Section 31 53 16 – Structural Timber

.12 Section 35 20 23 – Dredging

.13 Section 35 20 23 A – Sediment Management

.14 Section 35 31 23 – Rubblemound Breakwater

.15 Section 35 31 24 – Production of Stone

.16 Section 35 31 25 – Placement of Stone

1.2 REFERENCES

.1 Canadian Construction Documents Committee (CCDC):

.1 CCDC 2, Stipulated Price Contract.

.2 ISO Quality Management System:

.1 ISO 9001:2008.

.2 ISO 14001.

1.3 DOCUMENTS/SAMPLES TO SUBMIT

.1 The Contractor shall submit a Quality Control Program before work commences.

.2 Provide submittals in accordance with Section 01 33 00 - Submittals.

.3 The Quality Control Program shall include, at minimum but not be limited to, the following components:

.1 A description of the methods and tests, their frequency, name of the person in charge and requirements that will be implemented to ensure the respect of particular

requirements with respect to:

.1 The quality of stone production from the quarry, compliant to Section 35 31 24 – Stone production.

.2 The quality of stone placing, compliant to Section 35 31 25 – Placement of Stone.

.3 The quality of production and installation of galvanized hardware used for the assembling of parts.

.4 The quality of production and placing of concrete, compliant to the sections of division 03 – Concrete.

.5 The quality of the supply and assembly of the components of the gangways and other metal works, compliant with the sections of division 05 – Metals.

.2 A description of the methods and tests, their frequency, name of the person in charge and requirements that will be implemented to ensure compliance with electrical work according to the Electrical scope of works.

.3 A description of the methods and tests, their frequency, name of the person in charge and requirements that will be implemented to ensure compliance with dredging performance requirements (dredged elevation, monitoring of suspended solids, minimization of over dredging).

.4 A description of the methods and tests, their frequency, name of the person in charge and requirements that will be implemented to ensure compliance with performance requirements for management of dredged material (segregation, dewatering, absence of free water and disposal).

.4 A description of the methods and tests, their frequency, name of the person in charge and requirements that will be implemented to ensure compliance with good standards of practice during the construction of temporary structures (access road, offloading area, dewatering site, treatment site, ditches, etc.).

1.4 PERFORMANCE OBJECTIVES

.1 The Quality Control Program must enable the Departmental Representative to assess the quality of the work.

.2 To maintain the quality of the work throughout the contract, the Contractor shall design and implement an effective Quality Control System.

.3 In its Quality Control Program, the Contractor shall indicate how its System is organized and operates and indicate the main control points.

.4 The Contractor shall grant the Departmental Representative access to all internal Quality Control Reports. Moreover, if he deems it necessary, the Departmental Representative may conduct spot quality tests if there is reason to believe the quality is below standards

1.5 ACCESS TO WORKSITE

.1 Allow inspection/testing agencies access to work and off site manufacturing and fabrication

plants.

.2 Co-operate to provide reasonable facilities for such access.

1.6 PROCEDURE

.1 Notify appropriate agency and the Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.

.2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in work.

.3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.7 REJECTED WORK

.1 Remove defective work, whether the result of poor workmanship, use of defective products or damage and whether already 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 the work of other contractors, owners, tenants or users damaged by such removals or replacements promptly.

.3 If, in the opinion of the Departmental Representative, the Contractor is not expedient to correct defective work or work not performed in accordance with Contract Documents, the Departmental Representative will deduct from Contract Price the difference in value between work performed and that called for by Contract Documents, the amount of which will be determined by the Departmental Representative

1.8 TEST RESULTS

.1 Keep a complete record of the activities and test results pertaining to the Quality Control Program.

.2 Submit copies of inspection and test reports as requested by the Departmental Representative.

1.9 TESTS AND MIX DESIGNS

.1 Submit test reports and mixes used to treat water, soil or dredged material, if applicable

1.10 MILL TESTS

.1 Submit mill test certificates provided by the manufacturer.

1.11 EQUIPMENT AND SYSTEMS

.1 Submit adjustment, balancing and calibration reports for mechanical and electrical systems (bathymetric probes and other instrumentation).

PART 2 PRODUCT

.1 Not Used.

PART 3 EXECUTION

3.1 PERFORMANCE ASSESSMENT

.1 The Departmental Representative reserves the right to conduct testing, inspections and spot audits of work quality.

.2 Use of inspections and audits in no way relieves the Contractor of its performance responsibility and its responsibility to execute work in accordance with its Quality Control Program and Contract Documents.

.3 Allow the Departmental Representative access to work. If part of work is in preparation at locations other than place of work, allow access to such work whenever it is in progress.

.4 Give timely notice requesting inspection if work is designated for special tests, inspections or approvals called for by the Departmental Representative instructions or required by law of place of work.

.5 If Contractor covers or allows 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.

.6 The Departmental Representative may order part of the work to be examined if work is suspected not to be in accordance with Contract Documents. If, upon examination, such work is found to be not in accordance with Contract Documents, the Contractor shall correct such work and pay cost of inspection and repair. If such work is found to be in accordance with Contract Documents, the Departmental Representative shall pay the cost of inspection and replacement.

.7 If defects are revealed during testing and/or inspection, additional inspection and/or testing may be required to ascertain the nature and extent of the defects. The Contractor shall correct defects and irregularities as advised by the Departmental Representative, at no cost to the Departmental Representative, and pay the cost of retesting and inspection.

END OF SECTION

PART 1 GENERAL

1.1 LOCATION OF WORK SITE

.1 Sheet 02 of drawing PPB15-4068-M03 shows the limits of the space reserved for work.

.2 The Contractor is responsible for obtaining additional space if he judges it necessary for the execution of works.

1.2 LIMITATION OF RESPONSIBILITY

.1 For construction facilities, Contractor will be responsible for:

.1 Field offices;

.2 Offices for PWGSC and its representative;

.3 Equipment storage facilities;

.4 Outdoor storages for material and equipment;

.5 Missing access roads;

.6 Washrooms at work site;

.7 Water to compact material and dust control;

.8 Transportation of personnel;

.9 Safety of own personnel and equipment;

.10 All loading and unloading work;

.11 Maintenance of access roads (cleaning in summer, grading of gravel roads, oiling and snow removal on Work site accesses);

.12 Waste disposal;

.13 Phone lines and Internet;

.14 Customs clearance, if required;

.15 Work site fencing;

.16 Lighting for night work.

.17 The required installations for the exploitation of a quarry.

1.3 INSTALLATION AND REMOVAL OF EQUIPMENT

.1 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.

.2 Identify areas which have to be gravelled to prevent tracking of mud.

.3 Indicate use of supplemental or other staging area.

.4 Clean, level and set up construction facility area.

.5 Provide construction facilities in order to execute work expeditiously.

.6 Remove from site all such work after use.

1.4 OFFICES

.1 Provide office heated to 22 degrees C, lighted 750 lx and ventilated, of sufficient size to accommodate site meetings and furnished with drawing laydown table. Office must also be air conditioned to 22 degrees C.

.2 Provide marked and fully stocked first-aid case in a readily available location.

.3 Subcontractors to provide their own offices as necessary. Direct location of these offices.

.4 The Departmental Representative's office

.1 Provide temporary office for the Departmental Representative. Placement is to be confirmed with the Departmental Representative.

.2 Inside dimensions minimum 6 m long x 3 m wide x 2.4 m high, with floor 0.3 m above grade, complete with four 50% opening windows and one lockable door.

.3 Insulate building and provide heating system to maintain 22 degrees C inside temperature at -20 degrees C outside temperature.

.4 Finish inside walls and ceiling with plywood, hardboard or wallboard and paint in selected colours.
Finish floor with 19 mm thick plywood.

.5 Install electrical lighting system to provide min 750 lx using surface mounted shielded commercial fixtures with 10% upward light component.

.6 Provide private washroom facilities adjacent to office complete with flush or chemical type toilet, lavatory and mirror and maintain supply of paper towels and toilet tissue.

.7 The Contractor will supply and install in office the following furnishings: 2 desks 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 display board attached to the wall of minimum dimensions 750 mm x 900 mm, 1 drawered filing cabinet and a clothes rack. The file cabinet will be equipped with effective lock, which cannot be easily opened or bypassed.

.8 Maintain in clean condition.

.9 The Contractor will ensure that the access to the Departmental Representative is maintained, for the entire work period.

1.5 SERVICES

.1 The Contractor shall provide and pay for the installation of two telephone lines with separate numbers and a high speed internet service. A phone line must have a telephone with speakerphone and an answering machine. The other line will have an automatic fax/answering machine.

.2 The cost of electricity and local telephone service, fax and internet connection will be borne by the Contractor. Long distance calls will be paid by the Departmental Representative.

.3 Contractor must provide sufficient chemical toilets.

1.6 CONSTRUCTION PARKING

.1 Parking is authorized only in certain areas of work site.

.2 Provide and maintain adequate access to project site.

.3 Clean areas where site equipment has been used.

1.7 STORAGE AREA

.1 Storage is permitted in work site areas indicated on the drawings.

.2 Contractor provides adequate and covered spaces, if needed, for storage of materials.

.3 The Ministry and the Departmental Representative is not responsible for theft of tools, equipment or materials. Contractor is responsible for keeping own tools, equipment and materials safe.

1.8 WORK SITE FENCING

.1 Work site fencing must be provided around work areas and construction facilities.

1.9 WORK SITE SIGNAGE

.1 Within three (3) weeks of signing the contract, provide a worksite construction panel and install at a location designated by the Departmental Representative.

.2 Panel to measure 2.4 m x 1.2 m, in plywood on a wood frame and able to receive adhesive film overlay supplied by Departmental Representative.

.3 No other panel or signage may be posted on the work site, except the warning signs.

.4 Install project identification site sign where indicated by the Departmental Representative and install as follows:

.1 Drill holes for posts, erect frame and affix plywood panel to wood frame.

.2 Paint all panel and wood frame surfaces with one (1) coat of primer and apply two (2) coats of enamel paint. Use white paint on the face of the panel and black paint on the other surfaces.

.3 Apply vinyl coating on the painted face of the panel as indicated on the instructions provided.

.5 Submit for approval to Departmental Representative the Contractor's identification sign. General appearance of Contractor's panel to match that of the project identification site sign and the writing shall be in both official languages.

.6 Signs and notices for safety and instruction shall be in both official languages. Graphic symbols shall conform to CAN/CSA-Z321.

.7 Maintain approved signs and notices in good condition for duration of project, and dispose of offsite on completion of project or earlier if directed by Departmental Representative.

.8 Work site signage is allowed only on work site trailers. Dimensions and placement of signage

must be approved by the Departmental Representative before installation.

1.10 LIGHTING SYSTEM FOR NIGHT WORK

.1 Contractor must provide and install lighting systems for all night work.

1.11 CONSTRUCTION SIGNAGE

.1 Contractor must install and maintain adequate and safe signage to indicate Work-related detours, bypasses and hazards.

.2 This signage must be placed and maintained throughout duration of work in compliance with applicable safety codes and to satisfaction of the Departmental Representative. If, for some reason, signage is insufficient or poorly maintained in the Departmental Representative's opinion, fees incurred to re- establish signage will be directly deducted from amounts payable to Contractor.

1.12 PROTECTION AND MAINTENANCE OF TRAFFIC

.1 Provide access and temporary relocated roads as necessary to maintain traffic.

.2 Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by the Departmental Representative.

.3 Provide measures for protection and diversion of traffic, including provision of watch-persons and flag- persons, erection of barricades, placing of lights around and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs.

.4 Protect travelling public from damage to person and property.

.5 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.

.6 Verify adequacy of existing roads and allowable load limit on these roads. Contractor is responsible for repair of damage to roads caused by construction operations.

.7 Construct access and haul roads necessary.

.8 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.

.9 Dust control: adequate to ensure safe operation and environmental protection at all times.

.10 Lighting: to assure full and clear visibility for full width of haul road and work areas during night work operations.

.11 Provide snow removal during period of work.

.12 Upon completion of work, remove haul roads designated by the Departmental Representative.

1.13 CRAFT FOR USE BY DEPARTMENTAL REPRESENTATIVE

.1 The Contractor shall provide a safe, seaworthy boat for use by the Departmental Representative, complete with minimum 25 HP motor, fuel, life vests and all other equipment required by Canadian Coast Guard regulations. As well, provide a marine radio on board, compatible with marine radio system aboard Contractor's barges and/or with that of the supervision team.

.2 The craft and marine radio shall be available to Departmental Representative at all times throughout the duration of the project.

.3 The Contractor may use the boat for own purposes. However, the craft with operator is for the exclusive use of Departmental Representative.

.4 In addition to the craft available to the Departmental Representative, provide (upon request by Departmental Representative) a person handling the boat including team and appropriate equipment to inspect and follow up on Contractor's work.

.5 Provide a second, safe power craft for situations where Departmental Representative's craft is unavailable for safety reasons. Refer to section 01 35 29.06 (Health and safety).

1.14 ELECTRICAL SERVICES

.1 Provide all electrical services required on the work site.

.2 Pay for electrical services whether for lighting, heating or other possible electrical uses.

.3 Pay costs for the installation and removal of electrical services.

.4 Electrical installations shall comply with applicable standards and regulations.

1.15 CLEAN-UP

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

.2 Clean dirt or mud tracked onto paved or surfaced roadways.

.3 Store materials resulting from demolition activities that are salvageable.

.4 Stack stored new or salvaged material not in construction facilities.

PART 2 PRODUCT

2.1 NOT USED

.1 Not used.

PART 3 EXECUTION

3.1 NOT USED

.1 Not used

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 01 74 21 - Construction/Demolition Waste Management and Disposal

1.2 REFERENCES

.1 Canadian General Standards Board (CGSB)

.1 CGSB 1.59-97, Alkyd Exterior Gloss Enamel.

.2 CAN/CGSB 1.189-00, Exterior Alkyd Primer for Wood.

.2 Canadian Standards Association (CSA International)

.1 CSA-O121-M1978(C2003), Douglas Fir Plywood.

.3 Public Works and Government Services Canada (PWGSC) Standard Acquisition Clauses and Conditions (SACC)-ID: R2002D, Title: General Conditions 'C', in effect as of May 14, 2004.

1.3 ACCESS TO SITE

.1 Provide and maintain access lanes, sidewalk crossings and ramps as may be required for access to the work site.

.2 Provide and maintain access lanes and roads necessary to ensure access to third parties (users of the commercial wharf and the transformation plant).

1.4 PUBLIC TRAFFIC FLOW

.1 Provide and maintain competent signal flag operators, traffic signals, barricades and flares, lights, or lanterns as required to perform work and protect public.

1.5 EMERGENCY ROUTES

.1 Maintain access to property including overhead clearances for use by emergency response vehicles.

1.6 PROTECTION FOR NEIGHBOURING PRIVATE AND PUBLIC PROPERTY

.1 Protect surrounding private and public property from damage during performance of work.

.2 Be responsible for any damage incurred.

1.7 WASTE MANAGEMENT AND DISPOSAL

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

PART 2 PRODUCTS

2.1 CONSTRUCTION FENCE

.1 Erect temporary site enclosure using 1.8 m high galvanized metal trellis (mesh) construction fencing, wired to rolled-steel T-bar fence posts spaced at 2.4 m on center. Provide at least one lockable access barrier for trucks. Excavations must be protected at the end of each day with temporary barriers. Maintain fence in good repair. The fences and gates must respect CSST requirements (Workers Health and Safety Commission of Quebec).

PART 3 EXECUTION

3.1 INSTALLATION AND REMOVAL

.1 Provide temporary controls in order to execute work expeditiously.

.2 Remove from site all such work after use.

END OF SECTION

PART 1 GENERAL

1.1 QUALITY

.1 Products, materials, equipment and articles incorporated in work must be new, not damaged or defective, and of best quality for purpose intended. If requested, provide 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 waive 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 feasibility of products, decision rests strictly with the Departmental Representative based upon requirements of Contract Documents.

.5 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item.

1.2 AVAILABILITY

.1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify the 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 the Departmental Representative at commencement of work and should it subsequently appear that work may be delayed for such reason, the Departmental Representative reserves right to substitute with a more readily available equivalent product, at no increase in Contract Price or Contract Time.

1.3 STORAGE, HANDLING AND PROTECTION

.1 Handle and store products in manner to prevent damage, alterations, deterioration and soiling and in accordance with manufacturer's instructions when applicable.

.2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in work.

.3 Store products subject to damage from weather in weatherproof enclosures.

.4 Store cementitious products clear of earth or concrete floors, and away from walls.

.5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.

.6 Store lumber and sheet materials on flat, solid supports and keep clear of ground. Slope to shed moisture.

.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 the Departmental Representative.

.9 Touch up damaged factory finished surfaces to satisfaction of the Departmental Representative. Use touch-up materials to match original. Do not paint over name plates.

1.4 TRANSPORTATION

.1 Pay costs of transportation of products required in performance of work.

.2 Unload, handle and store such products.

1.5 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 the Departmental Representative in writing of conflicts between specifications and manufacturer's instructions, so that the Departmental Representative will establish course of action.

.3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes the Departmental Representative to require removal and re-installation at no increase in Contract Price or Contract Time.

1.6 QUALITY OF WORK

.1 Ensure quality of work is of highest standard, executed by experienced and skilled workers in respective duties for which they are employed. Immediately notify the 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. the Departmental Representative reserves right to require dismissal from site of workers deemed incompetent or careless.

.3 Decisions as to standard or fitness of quality of work in cases of dispute rest solely with the Departmental Representative, whose decision is final.

1.7 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.

1.8 CONCEALMENT

.1 In finished areas, conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.

1.9 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.

1.10 LOCATION OF FIXTURES

.1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.

.2 Inform the Departmental Representative of conflicting installation. Install as directed.

1.11 FASTENINGS

.1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.

.2 Prevent electrolytic action between dissimilar metals and materials.

.3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.

.4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. 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.

1.12 FASTENINGS – EQUIPMENT

.1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.

.2 Use heavy hexagon heads, semi-finished unless otherwise specified. 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.

1.13 PROTECTION OF WORK IN PROGRESS

.1 Prevent overloading of parts of building.

1.14 EXISTING UTILITIES

.1 When breaking into or connecting to existing services or utilities, execute work at times directed by local governing authorities, with minimum of disturbance to work and pedestrian and vehicular traffic.

.2 Protect, relocate or maintain existing active services. When services are encountered, cap off

in manner approved by authority having jurisdiction. Stake and record location of capped service.

PART 2 PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 01 33 00 – Submittal Procedures

1.2 DOCUMENTS/SAMPLES TO SUBMIT FOR APPROVAL/INFORMATION

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

1.3 MATERIALS/EQUIPMENT

.1 Materials and equipment required for original installation.

.2 Change in materials/equipment: Submit request for substitution in accordance with Section 01 33 00 – Submittal Procedures.

1.4 PREPARATION

.1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.

.2 After uncovering, inspect conditions affecting performance of work.

.3 Beginning excavation or partial demolition means acceptance of existing conditions.

.4 Supply and install supports to assure structural integrity of surroundings. Provide devices and methods to protect other portions of project from damage.

.5 Provide protection from elements for areas which are to be exposed by uncovering work; maintain excavations free of water.

1.5 EXECUTION

.1 Execute partial demolition, as well as excavation and filling, to complete Work.

.2 Fit several parts together, to integrate with other work.

.3 Execute work by methods that avoid damage to other work, and which will provide proper surfaces to receive patching and finishing.

.4 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.

.5 Restore work with new products in accordance with requirements of Contract Documents.

.6 Refinish surfaces to match adjacent finishes. Refinish continuous surfaces to nearest intersection.
Refinish assemblies by refinishing entire unit.

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 35 43 –Environmental Procedures

.2 Section 01 74 21 – Construction/Demolition Waste Management and Disposal

1.2 REFERENCES

.1 Environment Quality Act (CQLR, c Q-2)

.2 Regulation Respecting Hazardous Materials (Q-2, r 32)

.3 Regulation Respecting the Landfilling and Incineration of Residual Materials (Q-2, r 19)

1.3 PROJECT CLEANLINESS

.1 Maintain work in tidy condition, free from accumulation of waste products and debris, including that caused by the Departmental Representative or other Contractors.

.2 Remove debris and waste products from worksite regularly to keep it free from garbage, hazardous waste (HW), waste products, material, substances or equipment not needed for carrying out work and dispose of them in compliance with the regulations in effect. Proof of disposal in a place authorized by the Department of Sustainable Development, the Environment and the Fight Against Climate Change (MDDELCC) shall be provided to the Departmental Representative.

.3 Do not burn waste materials on site.

.4 Throwing any material, waste, HW, debris or residue into the Saint Lawrence River is strictly prohibited.
Should it occur, the material shall be recovered immediately.

.5 Clear snow and ice from access roads. Contractor shall dispose of snow removed from work areas in a designated site authorized by MDDELCC, in agreement with the the Departmental Representative.

.6 Keep public roads around the worksite free from material, waste, HW, debris, residue, or scrap from the worksite, and clean the public roads immediately should any such material be found thereon.

.7 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.8 Provide on-site containers for collection of waste materials and debris.

.9 Provide and use marked separate bins for recycling. Refer to Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

.10 Dispose of waste materials and debris off site.

.11 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.

.12 Store volatile waste in covered metal containers, and remove from premises at end of each working day.

.13 Provide adequate ventilation during use of volatile or noxious substances.

.14 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

.15 Water Used for Washing Concrete Mixers

.1 Excess concrete and cement from concrete mixers shall be poured into molds or some other type of leak-proof container. Concrete residue shall be managed with construction waste.

.2 Water used for washing concrete mixers shall be collected in a leak-proof pond so as to prevent any run-off into the environment. The cleaning area shall be located over 30 m from the Saint- Lawrence River.

.3 Water used for washing shall not be released directly into a watercourse or body of water or on the ground. Water used for washing may be collected by the concrete supplier and returned to the concrete plant for disposal. Otherwise, this water shall be confined, sampled and treated (if necessary) in order to meet MDDELCC's surface water quality criteria (protection of aquatic life – acute effects) for suspended material, pH and C_{10}-C_{50}, before release into the environment.

1.4 FINAL CLEANING

.1 When work is substantially performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining work.

.2 Remove waste products and debris other than that caused by others, and leave work clean and suitable for occupancy.

.3 Prior to final review remove surplus products, tools, construction machinery and equipment.

.4 Remove waste products from the site and dispose of them in compliance with the regulations in effect. Do not burn waste materials on site. Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris. Proof of disposal in a place authorized by MDDELCC shall be provided to the Departmental Representative.

.5 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.

.6 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls and floors.

.7 Clean lighting reflectors, lenses, and other lighting surfaces.

.8 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.

.9 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.

.10 Remove dirt and other disfiguration from exterior surfaces.

.11 Sweep and wash clean paved areas.

.12 Clean roofs, downspouts, and drainage systems.

.13 Remove snow and ice from access to building.

.14 Contractor shall recover all hazardous waste (HW) produced during the work. All HW shall be sorted and managed in compliance with the regulations in effect, more particularly the Regulation Respecting Hazardous Materials (Q-2, r. 32).

.15 Contractor shall dispose of the HW in a site duly authorized by the MDDELCC. Proof of disposal shall be provided to the Departmental Representative.

.16 Contractor shall recover all residual material produced during the work (waste, recyclables, construction debris, etc.). All residual material shall be sorted and managed in compliance with the regulations in effect.

.17 Contractor shall dispose of the residual material in a site duly authorized by MDDELCC. Proof of disposal shall be provided to the Departmental Representative.

1.5 WASTE MANAGEMENT AND DISPOSAL

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

PART 2 PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 01 35 43 –Environmental Procedures

.2 Section 01 74 11 – Cleaning

1.2 WASTE MANAGEMENT GOALS

.1 Prior to start of work conduct meeting with the Departmental Representative to review and discuss waste management goal and Contractor's proposed Waste Reduction workplan for Construction, Renovation and /or Demolition (CRD) waste to be project generated.

.2 The waste management goal is to divert as much as possible of total Project Waste from landfill sites. Prior to project completion provide the Departmental Representative with documentation certifying that waste management, recycling, reuse of recyclable and reusable materials have been extensively practiced.

.3 Minimize amount of non-hazardous solid waste generated by project and accomplish maximum source reduction, reuse and recycling of solid waste produced by CRD activities.

.4 Protect environment and prevent environmental pollution damage.

1.3 REFERENCES

.1 Definitions:

.1 Approved/Authorized recycling facility: waste recycler approved by applicable provincial authority or other users of material for recycling approved by the the Departmental Representative.

.2 Class III: non-hazardous waste – construction renovation and demolition waste.

.3 Construction, Renovation and/or Demolition (CRD) Waste: Class III solid, non-hazardous waste generated during construction, demolition, and/or renovation activities

.4 Inert Fill: inert waste – exclusively asphalt and concrete.

.5 Waste Source Separation Program (WSSP): implementation and co-ordination of ongoing activities to ensure designated waste materials will be sorted into pre-defined categories and sent for recycling and reuse, maximizing diversion and potential to reduce disposal costs.

.6 Recyclable: ability of product or material to be recovered at end of its life cycle and re- manufactured into new product for reuse.

.7 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.

.8 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.

.9 Reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes:

.1 Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.

.2 Returning reusable items including pallets or unused products to vendors.

.10 Salvage: removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.

.11 Separate Condition: refers to waste sorted into individual types.

.12 Source Separation: act of keeping different types of waste materials separate beginning from the point they became waste.

.13 Waste Audit (WA): detailed inventory of estimated quantities of waste materials that will be generated during construction, demolition, deconstruction and/or renovation. Involves quantifying by volume/weight amounts of materials and wastes that will be reused, recycled or landfilled.

.14 Waste Diversion Report: detailed report of final results, quantifying cumulative weights and percentages of waste materials reused, recycled and landfilled over course of project. Measures success against Waste Reduction workplan (WRW) goals and identifies lessons learned.

.15 Waste Management Co-ordinator (WMC): Contractor Representative responsible for supervising waste management activities as well as co-ordinating required submittal and reporting requirements.

.16 Waste Reduction workplan (WRW): written report which addresses opportunities for reduction, reuse, or recycling of materials generated by project. Specifies diversion goals, implementation and reporting procedures, anticipated results and responsibilities. Waste Reduction workplan information acquired from Waste Audit.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Prepare and submit at intervals agreed to by the Departmental Representative the following:

.1 Receipts, scale tickets, waybills and/or receipts for disposal of waste materials generated during the work (hazardous waste, waste, recyclable materials, construction debris, etc.) indicating the quantities and types of materials reused/repurposed, recycled or disposed of.

.2 Submit prior to final payment the following:

.1 Provide the receipts, scale tickets, waybills and receipts for disposal of waste materials generated during the work (hazardous waste, waste, recyclable materials, construction debris, etc.) that confirm the quantities and types of materials reused/repurposed, recycled and disposed of, as well as their destination.

1.5 USE OF SITE AND FACILITIES

.1 Execute work with minimal interference and disturbance to normal use of premises.

.2 Maintain security measures established by facility. Provide temporary security measures approved by the Departmental Representative.

1.6 WASTE PROCESSING SITES

.1 Contractor is responsible to research and locate waste diversion resources and service providers. Salvaged materials are to be transported off site to approved and/or authorized recycling facilities or to users of material for recycling.

1.7 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 Protect, stockpile, store and catalogue salvaged items.

.4 All HW must be separated and managed in accordance with regulations in effect, specifically, the Regulation Respecting Hazardous Materials (Q-2, r. 32).

.5 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.

.6 Protect structural components not removed and salvaged materials from movement or damage.

.7 Support affected structures. If safety of building is endangered, cease operations and immediately notify the Departmental Representative.

.8 Protect surface drainage, mechanical and electrical from damage and blockage.

.9 Provide on-site facilities and containers for collection and storage of reusable and recyclable materials.

.10 Separate and store materials produced during project in designated areas.

.11 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated processing facilities.

.1 On-site source separation is recommended.

.2 Remove co-mingled materials to off-site processing facility for separation.

.3 Obtain waybills, receipts and/or scale tickets for separated materials removed from site and provide to the Departmental Representative.

.4 Materials reused on-site are considered to be diverted from landfill and as such are to be included in all reporting.

1.8 DISPOSAL OF WASTES

.1 Do not bury rubbish or waste materials.

.2 Do not dispose of materials, waste, hazardous waste, debris or residue into waterways, storm, or sanitary sewers.

.3 Keep records of construction waste including:

.1 Number and size of bins.

.2 Waste type of each bin.

.3 Total tonnage generated.

.4 Tonnage reused or recycled.

.5 Reused or recycled waste destination.

.4 Remove materials on-site as work progresses.

.5 Contractor is responsible for collecting all HW generated during the work. All HW must be separated and managed in accordance with regulations in effect, specifically, the Regulation Respecting Hazardous Materials (Q-2, r. 32).

.6 Contractor shall dispose of its HW at a disposal site approved by the MDDELCC. Proof of disposal shall be provided to the the Departmental Representative.

.7 Contractor shall collect all waste materials generated during the work (waste, recyclable materials, construction waste, etc.). All waste materials shall be separated and managed in accordance with the regulations in effect.

.8 Contractor must dispose of its waste materials at a disposal site approved by the MDDELCC. Proof of disposal shall be provided to the the Departmental Representative.

1.9 SCHEDULING

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

PART 2 PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 EXECUTION

3.1 APPLICATION

.1 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.

3.2 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 – Cleaning and Section 02 50 13 – Management of Toxic Waste.

.1 Leave work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 – Cleaning and Section.

.3 Waste Management: separate waste materials for reuse and recycling or disposal.

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

.2 Source separate materials to be reused/recycled into specified sort areas.

3.3 WASTE DIVERSION

.1 Separate materials from general waste stream and stockpile in separate piles or containers, as reviewed 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 RELATED REQUIREMENTS

.1 Section 01 74 21 - Construction/Demolition Waste Management and Disposal

1.2 ADMINISTRATIVE REQUIREMENTS

.1 Acceptance of work Procedures:

.2 Departmental Representative's Inspection:

.1 The Departmental Representative and Contractor are to inspect work and identify defects and deficiencies.

.2 Contractor to correct Work as directed.

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

.1 Work: completed and inspected for compliance with Contract Documents.

.2 Defects: corrected and deficiencies completed.

.3 Equipment and systems: tested, and fully operational.

.4 Operation of systems: demonstrated to the Departmental Representative.

.5 Commissioning of mechanical systems: completed in accordance with rules and submit copies of final Commissioning Report to the Departmental Representative.

.6 Work: complete and ready for final inspection.

.4 Final Inspection:

.1 When completion tasks are done, request final inspection of Work by the Departmental Representative and Contractor.

.2 If work is incomplete according to the Departmental Representative, complete outstanding items and request re-inspection.

1.3 FINAL CLEANING

.1 Remove surplus materials, excess materials, rubbish, tools and equipment.

.2 Waste Management: in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

PART 2 PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENT

.1 Section 01 33 00 - Submittal Procedures.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

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

1.3 CONTENTS - PROJECT RECORD DOCUMENTS

.1 Table of Contents for Each Volume:

.1 Provide title of project;

.2 Date of submission; names.

.3 Names, addresses and telephone numbers of the Departmental Representative and Contractor with names of responsible parties.

.4 Schedule of products and systems, indexed to content of volume.

.2 For each product or system:

.1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

.3 Product Data: mark each sheet to identify specific products and data applicable to installation; delete inapplicable information.

.4 Drawings: supplement product data.

1.4 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

.1 Record information on set of opaque drawings and in copy of specifications.

.2 Use felt tip marking pens.

.3 Record information concurrently with construction progress.

.1 Do not conceal Work until required information is recorded.

.4 Contract Drawings and shop drawings: mark each item to record actual construction, including:

.1 Measured depths of elements of foundation in relation to grade.

.2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

.3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.

.4 Field changes of dimension and detail.

.5 Changes made by change orders.

.6 Details not on original Contract Drawings.

.7 References to related shop drawings and modifications.

.5 Specifications: mark each item to record actual construction, including:

.1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.

.2 Changes made by Addenda and change orders.

.6 Provide digital photos, if requested, for site records.

PART 2 PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Methods and procedures for total or partial demolition of structures.

1.2 RELATED SECTIONS

.1 Section 01 11 11 – Description of work

.2 Section 01 33 00 - Submittal Procedures

.3 Section 01 35 29 – Health and safety requirements

.4 Section 01 35 43 – Environmental procedures

.5 Section 01 56 00 - Temporary Barriers and Enclosures

.6 Section 01 74 21 - Construction/Demolition Waste Management and Disposal

.7 Section 33 56 13 – Aboveground Fuel Storage Tank

1.3 REFERENCES

.1 Canadian Environmental Protection Act (CEPA)

.1 CCME PN 1327, Environmental Code of Practice for Aboveground Storage Tank Systems Containing Petroleum Products

.2 Canadian Standards Association (CSA International).

.1 CSA S350-M, Code of Practice for Safety in Demolition of Structures.

.3 Department of Justice Canada (Jus).

.1 Canadian Environmental Assessment Act (CEAA).

.2 Canadian Environmental Protection Act (CEPA).

.1 SOR/2003-2, On-Road Vehicle and Engine Emission Regulations.

.2 SOR/2006-268, Regulations Amending the On-Road Vehicle and Engine Emission Regulations.

.3 Transportation of Dangerous Goods Act (TDGA), 1992, c. 34.

.4 Underwriters' Laboratories of Canada (ULC)

.1 CAN/ULC-S660, Standard for Nonmetallic Underground Piping for Flammable and Combustible Liquids.

.2 ULC/ORD-C58.15, Overfill Protection Devices for Flammable Liquid Storage Tanks.

.3 ULC/ORD-C58.19, Spill Containment Devices for Underground Flammable Liquid Storage Tanks.

.5 U.S. Environmental Protection Agency (EPA).

.1 EPA CFR 86.098-10, Emission standards for 1998 and later model year Otto-cycle heavy-duty engines and vehicles.

.2 EPA CFR 86.098-11, Emission standards for 1998 and later model year diesel heavy-duty engines and vehicles.

.3 EPA 832/R-92-005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.4 DEFINITIONS

.1 Hazardous Materials: dangerous substances, dangerous goods, hazardous commodities and hazardous products, may include but not limited to: poisons, corrosive agents, flammable substances, ammunition, explosives, radioactive substances, or other material that can endanger human health or well being or environment if handled improperly.

1.5 SUBMITTALS FOR APPROVAL/INFORMATION

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

.2 The Contractor is responsible for fulfilment of reporting requirements.

.3 Submit if requested by Departmental Representative, copies of certified weigh bills, bills of lading or receipts from authorized disposal sites and reuse and recycling facilities for material removed from site.

.1 Written authorization from Departmental Representative is required to deviate from receiving organizations.

.4 When required by authorities having jurisdiction, submit for approval drawings, diagrams or details showing sequence of demolition work and supporting structures and underpinning.

.5 Submit drawings stamped and signed by qualified professional engineer registered or licensed in Province of Quebec, Canada.

.6 Submit procedures for demolition

.1 Submit to Departmental Representative, for approval and examination, drawings of shoring and bracing required. The drawings must be stamped and signed by a professional engineer registered and authorized to practice in the province of Quebec, Canada.

.2 Submit to Departmental Representative all demolition procedures, which must comply with the requirements with environmental protection.

1.6 QUALITY ASSURANCE

.1 Regulatory Requirements: Ensure Work is performed in compliance with CEPA, CEAA, TDGA, and applicable Provincial/Territorial and Municipal regulations.

.2 Meetings:

.1 Prior to start of Work arrange for site visit with Departmental Representative to examine existing site conditions adjacent to demolition work.

.2 Hold project meetings as requested by Departmental Representative.

.3 Ensure all key personnel attend.

.4 Departmental Representative will provide written notification of change to meeting schedule established upon contract award.

1.7 WASTE MANAGEMENT AND DISPOSAL

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

.2 Divert excess materials from landfill to site approved by Departmental Representative.

1.8 ENVIRONMENTAL PROTECTION

.1 Ensure Work is done in accordance with Section 01 35 43 - Environmental Procedures.

.2 Ensure that demolition work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.

.3 Fires and burning of waste or materials is not permitted on site.

.4 Do not dispose of waste or volatile materials including but not limited to: mineral spirits, oil, petroleum based lubricants, or toxic cleaning solutions into watercourses, storm or sanitary sewers.

.1 Ensure proper disposal procedures are maintained throughout project.

.5 Do not pump water containing suspended materials into watercourses, storm or sanitary sewers, or onto adjacent properties.

.6 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with authorities having jurisdiction and as directed by Departmental Representative.

.7 Cover or wet down dry materials and waste to prevent blowing dust and debris. If required by Departmental Representative, control dust on all temporary roads.

1.9 EXISTING CONDITIONS

.1 The Contractor shall take the necessary steps to become thoroughly familiar with all aspects of the work site environment.

.2 The Contractor will be responsible for the wintering of harbour's steel floating docks for season 2016-2017.

.3 The Contractor will be responsible for the installation of all harbour's floating docks in spring 2017 for season 2017-2018, no later than May 1st 2017.

.4 The results of the most recent bathymetric survey are included in drawings. The information is provided for tender only. Information can differ form site conditions during Work and it is the Contractor's responsibility to verify the validity of initial conditions.

.5 Contractor shall provide Departmental Representative with Work method about junction between existing wharf and the new access road in order to preserve the sealing of this zone.

.6 The Seaplane wharf is the property of Transport Canada, and DFO was allowed to demolish the timber part of the wharf. The concrete parts of the seaplane wharf will remain on site and be included in the project.

.7 The actual wasted oil tank slab is located on the exterior of the Fishermen's wharf. It must be demolished and if concrete is clean and broken in pieces no bigger than 300 mm, it can be included in the project as quarry run.

.8 The wasted oil tank must be dismantled and demolished as specified in the Règlement sur les systèmes de stockage de produits pétroliers et de produits apparentés (see section 33 56 13).

.9 The actual crane on wharf must be kept on use at all times during the project, except out of the fishing season, approximately between October 1st and April 25th (to be validated by Contractor with local Fishermen).

.10 Should material resembling hazardous substance be encountered in course of demolition, stop work, take preventative measures, and notify Departmental Representative immediately. Do not proceed until written instructions have been received.

.11 If the demolition works require the installation of temporary supporting structures to protect the existing hauling ramp, the workshop drawings must carry the seal and signature of a recognized qualified engineer or holding a license enabling him to exert in Canada, in the Province de Québec.

.12 Structures to be demolished to be based on their condition on date that tender is accepted.

.1 Remove, protect and store salvaged items as directed by Departmental Representative.

.13 The Contractor shall conduct research on historical temperature, wave and ice conditions and assess possible difficulties. There shall be no additional payment for lost time as a result of weather conditions.

.14 Weather conditions can be difficult (wind, cold, etc.). The work site may be subject to significant agitation due to waves and the surge of water level during storms.

1.10 SCHEDULING

.1 Employ necessary means to meet project time lines without compromising specified minimum rates of material diversion.

.1 In event of unforeseen delay notify Departmental Representative in writing.

Part 2 Products

2.1 EQUIPMENT

.1 Equipment and heavy machinery to:

.1 On-road vehicles to meet applicable emission requirements as prescribed in CEPA-SOR/2003-2, On-Road Vehicle and Engine Emission Regulations.

.2 Leave machinery running only while in use, except where extreme temperatures prohibit shutting machinery down.

Part 3 Execution

3.1 PROTECTION

.1 Prevent movement, settlement or damage of adjacent structures to prevent damage. Protect existing steel sheet pilling to preserve near dolosse protection

.1 Repair damage caused by demolition work as directed by Departmental Representative.

.2 Support affected structures and, if safety of structure being demolished or adjacent structures appears to be endangered, take preventative measures, stop Work and immediately notify Departmental Representative.

3.2 PREPARATION

.1 Do Work in accordance with Section 01 35 29 - Health and Safety Requirements.

.2 The following components, recovered from demolition or modification work, shall be submitted to Departmental Representative:

.1 Small gangway between seaplane and concrete block.

.3 Information concerning the existing structures given on drawings is partial and had to be supplemented on the site.

.4 Temporary Erosion and Sedimentation Control:

.1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction. Inspect control measures, ensure maintenance and repair as needed during demolition work.

.2 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal after completion of demolition work.

.5 Protection of in-place conditions:

.1 Work in accordance with Section 01 35 43 - Environmental Procedures.

.2 Prevent movement, settlement or damage of adjacent structures, services, adjacent grades and parts of existing structures to remain.

.1 Provide bracing and shoring and underpinning as required.

.2 Repair damage caused by demolition as directed by Departmental Representative.

.3 Support affected structure. If safety of structure being demolished appears to be endangered, take preventative measures, stop Work and immediately notify Departmental Representative.

.6 Surface Preparation:

.1 Disconnect and re-route electrical and telephone service lines entering buildings to be demolished.

.1 Post warning signs on electrical lines and equipment which must remain energized to serve other properties during period of demolition.

.2 Disconnect and cap designated mechanical services.

.1 Sewer and water lines: remove as directed by Departmental Representative.

.2 Other underground services: remove and dispose of as directed by Departmental Representative.

.3 Do not disrupt active or energized utilities designated to remain undisturbed.

3.3 SAFETY CODE

.1 Do demolition work in accordance with Section 01 56 00 - Temporary Barriers and Enclosures, 01 35 29 Safety and Health and also codes regarding demolition work.

3.4 REMOVAL OF HAZARDOUS WASTES

.1 Remove contaminated or dangerous materials as defined by authorities having jurisdiction, relating to environmental protection, from site and dispose of in safe manner to minimize danger at site or during disposal in accordance with section 01 74 21 - Construction/Demolition Waste Management and Disposal.

3.5 DEMOLITION AND EXCAVATION

.1 No compensation will be approved for demolition work outside boundaries of demolition indicated on plans or determined by Departmental Representative.

.2 Information concerning the existing structures is drawn from « As-built » plans as well as from statements carried out on the le site. The tender must reflect these conditions. In the 48 hours following the discovery of a divergence at the time of the realization of work, Contractor shall inform the Departmental Representative of the situation.

.3 Remove demolition material or excavate at elevations on plan.

.4 Execute demolition work to permit construction.

.5 Excavate the marine sediments, overburden and rock in place to create the foundation for new wharves. Reuse the excavated material as stone, run material for new breakwater.

.6 When demolition and excavation works are done, ask Departmental Representative for verification of rises and dimensions.

.7 Do not allow pieces of wood to drift or release demolition material in the water. The Contractor shall immediately recover any debris released into water, at his own expense, and will be held responsible for any damage caused by floating or released material.

.8 Identify sources for recycling granular material.

.1 To get more information about recycling, communicate with provincial/local granular material supplier.

.9 Remove existing equipment, services, and obstacles where required for refinishing or making good of existing surfaces, and replace as work progresses.

.10 At the end of each day work, leave Work in safe and stable condition.

.11 Carry out demolition work as so to minimize dusting. Keep materials wet as directed by Departmental Representative.

.12 Only dispose of waste material within the specified alternative disposal option as directed by Departmental Representative.

.1 Additional disposal options for waste diversion to be provided on-site by Departmental Representative prior to disposal.

.13 Do not dispose materials in landfill or waste stream destined for landfill.

.14 Unless otherwise specified, remove and dispose of demolition materials in accordance with competent authority requirements.

.15 Use natural lighting to do work where possible. Shut off lighting at the end of each day, except for those required for security purposes.

.16 Take account of the hydrostatic and hydrodynamic uplifts during demolition and construction work, in particular, in the sector of the dolosse protection.

3.6 POST-DEMOLITION SURVEY

.1 After demolishing wharf and before installing the new structures, the Contractor shall conduct a bathymetric and/or land survey to map the natural ground profile within the limits of the new structures.

.2 The Contractor shall not begin construction of the stone protection and breakwater until the Departmental Representative has reviewed the survey and given permission.

3.7 MATERIALS

.1 All materials from demolition that cannot be reused or those who will not be returned to Departmental Representative will become the property of the Contractor and shall be removed promptly according to Work progress.

.2 Do all sorting of materials directly on site. Unless specified, no other method will be accepted.

.3 The Contractor shall refer to Section 01 74 21 – Construction/Demolition Waste Management for the procedures for handling and storing demolition materials on-site.

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 01 33 00 – Submittal Procedure

.2 Section 01 35 29.06 – Health and Safety

.3 Section 01 35 43 – Environmental Protection

.4 Section 01 61 00 – Common Product Requirements

.5 Section 01 74 11 - Cleaning

.6 Section 33 56 13 – Aboveground Fuel Storage Tank

1.2 REFERENCES

.1 Definitions:

.1 Dangerous Goods: product, substance, or organism specifically listed or meets hazard criteria established in Transportation of Dangerous Goods Regulations.

.2 Hazardous Material: product, substance, or organism used for its original purpose; and is either dangerous goods or material that will cause adverse impact to environment or adversely affect health of persons, animals, or plant life when released into the environment.

.3 Hazardous Waste: hazardous material no longer used for its original purpose and that is intended for recycling, treatment or disposal.

.2 Reference Standards:

.1 Canadian Environmental Protection Act (CEPA), 1999

.1 Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations (SOR/2005-149).

.2 Department of Justice Canada (Jus)

.1 Transportation of Dangerous Goods Act (TDG Act), 1992, (c. 34).

.2 Transportation of Dangerous Goods Regulations (T-19.01-SOR/2001-286).

.3 Health Canada / Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

1.3 DOCUMENTS/SAMPLES TO BE SUBMITTED FOR APPROVAL/INFORMATION

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

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for hazardous materials. Include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit two copies of WHMIS MSDS in accordance with Section 01 35 29 06 – Health and Safety Requirements to Agency Representative for each hazardous material required prior to bringing hazardous material on site.

.3 Submit hazardous materials management plan to the Departmental Representative that identifies hazardous materials, usage, location, personal protective equipment requirements, and disposal arrangements.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle in accordance 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 Transport hazardous materials and wastes in accordance with Transportation of Dangerous Goods Act, Transportation of Dangerous Goods Regulations, and applicable provincial regulations.

.4 Storage and Handling Requirements:

.1 Coordinate storage of hazardous materials with to the Departmental Representative and abide by local requirements for labelling and storage of materials and wastes.

.2 Store and handle hazardous materials and wastes in accordance with applicable federal and provincial laws, regulations, codes, and guidelines.

.3 Store and handle flammable and combustible materials in accordance with National Fire Code of Canada requirements.

.4 Keep up to 45 litres of flammable and combustible liquids such as gasoline, kerosene and naphtha for ready use, provided that the following conditions are met.

.1 Store flammable and combustible liquids in approved safety cans bearing the Underwriters' Laboratory of Canada or Factory Mutual seal of approval.

.2 Storage of quantities of flammable and combustible liquids exceeding 45 litres requires the approval of to the Departmental Representative.

.5 Transfer flammable and combustible liquids away from open flames or heat-producing devices.

.6 Solvents or cleaning agents must be non-flammable or have flash point above 38 degrees C.

.7 Store flammable and combustible waste liquids for disposal in approved containers located in safe, ventilated area.

.8 Keep quantities to minimum. Smoking is prohibited in areas where hazardous materials are stored, used, or handled.

.9 Storage requirements for quantities of hazardous materials and wastes in excess of 5 kg for solids, and 5 litres for liquids:

.1 Store hazardous materials and wastes in closed and sealed containers.

.2 Label containers of hazardous materials and wastes in accordance with WHMIS.

.3 Store hazardous materials and wastes in containers compatible with that material or waste.

.4 Segregate incompatible materials and wastes.

.5 Ensure that different hazardous materials or hazardous wastes are stored in separate containers.

.6 Store hazardous materials and wastes in secure storage area with controlled access.

.7 Maintain clear egress from storage area.

.8 Store hazardous materials and wastes in location that will prevent them from spilling into environment.

.9 Have appropriate emergency spill response equipment available near storage area, including personal protective equipment.

.10 Maintain inventory of hazardous materials and wastes, including product name, quantity, and date when storage began.

.11 When hazardous waste is generated on site:

.1 Coordinate transportation and disposal with to the Departmental Representative.

.2 Comply with applicable federal, provincial and municipal laws and regulations for generators of hazardous waste.

.3 Use licensed carrier authorized by provincial authorities to accept subject material.

.4 Before shipping material obtain written notice from intended hazardous waste treatment or disposal facility it will accept material and it is licensed to accept this material.

.5 Label containers with legible, visible safety marks as prescribed by federal and provincial regulations.

.6 Ensure that only trained personnel handle, offer for transport, or transport dangerous goods.

.7 Provide photocopy of shipping documents and waste manifests to the Departmental Representative.

.8 Track receipt of completed manifest from consignee after shipping dangerous goods.

Provide photocopy of completed manifest to the Departmental Representative.

.9 Report discharge, emission, or escape of hazardous materials immediately to the Departmental Representative and appropriate provincial authority. Take reasonable measures to control release.

.12 Ensure personnel have been trained in accordance with Workplace Hazardous Materials Information System (WHMIS) requirements.

.13 Report spills or accidents immediately to the Departmental Representative.

Submit a written spill report to the Departmental Representative within 24 hours of incident.

PART 2 PRODUCTS

2.1 MATERIALS

.1 Bring on site only quantities of hazardous material required to perform Work.

.2 Maintain MSDS in proximity to where materials are being used. Communicate this location to personnel who may have contact with hazardous materials.

PART 3 EXECUTION

3.1 CLEANING

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

.1 Leave Work area clean at end of each day.

.2 Final cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 – Cleaning.

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

1.2 REFERENCES

.1 Unless otherwise indicated, refer to latest edition and amendments of following standards prevailing at effective date of Contract.

.2 Canadian Standards Association (CSA International)

.1 CAN/CSA-A23.1-09/A23.2-09, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.

.2 CAN/CSA O86S1-05, Supplement No. 1 to CAN/CSA-O86-01, Engineering Design in Wood.

.3 CSA O121-M1978, Douglas Fir Plywood.

.4 CSA O151-04, Canadian Softwood Plywood.

.5 CSA O153-M1980, Poplar Plywood.

.6 CAN/CSA-O325.0-92, Construction Sheathing.

.7 CSA O437 Series-93, Standards for OSB and Waferboard.

.8 CSA S269.1-1975, Falsework for Construction Purposes.

.9 CAN/CSA-S269.3-M92, Concrete Formwork, National Standard of Canada.

.3 Underwriters' Laboratories of Canada (ULC)

.1 CAN/ULC-S701-05, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.

1.3 DOCUMENTS/SAMPLES SUBMITTALS FOR APPROVAL/INFORMATION

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

.2 Submit shop drawings for formwork and falsework.

.1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Quebec, Canada.

.3 Submit WHMIS Material Safety Data Sheets (MSDSs).

.4 Co-ordinate submittal requirements and provide submittals.

.5 Indicate method and schedule of construction, shoring, stripping and re-shoring procedures, materials, arrangement of joints, special architectural exposed finishes, ties, liners and locations of temporary embedded parts. Comply with CSA S269.1 for falsework drawings and with CAN/CSA-S269.3 for formwork drawings.

.6 Indicate formwork design data: permissible rate of concrete placement, and temperature of concrete, in forms.

.7 Indicate sequence of erection and removal of formwork/falsework as directed by the

Departmental Representative.

.8 When slip forming is used, submit details of equipment and procedures for review by the Departmental Representative.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Waste management and disposal

.1 Store and manage hazardous materials in accordance with Section 01 74 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 or reuse facility as approved by the Departmental Representative.

.4 Divert plastic materials from landfill to a recycling or reuse facility as approved by the Departmental Representative.

PART 2 PRODUCTS

2.1 MATERIALS/EQUIPMENT

.1 Formwork materials

.1 For concrete presenting no special architectural features, use formwork materials to CAN/CSA- O86. Use of steel concrete forming is also permitted.

.2 For concrete with special architectural features, use formwork materials to CSA-A23.1/A23.2.

.3 Rigid insulation board: to CAN/ULC-S701.

.2 Pan forms: removable, permanent, steel, reinforced plastic, as indicated.

.3 Tubular column forms: round, steel spirally wound laminated fibre forms, internally treated with release material.

.4 Form ties

.1 For concrete not designated architectural, use removable or snap-off metal ties, fixed or adjustable length, free of devices leaving holes larger than 25 mm diameter in concrete surface.

.2 For architectural concrete, use snap ties complete with plastic cones and light grey concrete plugs.

.5 Form liner

.1 Plywood: Douglas Fir to CSA O121, Canadian Softwood Plywood to CSA O151, Poplar to CSA O153.

.2 Waferboard: to CAN/CSA-O325.0.

.6 Form release agent: non-toxic, low VOC.

.7 Form stripping agent: colourless mineral oil, non-toxic, low VOC, free of kerosene.

.8 Falsework materials: to CSA-S269.1.

.9 Sealant: as recommended by the Departmental Representative or in plan notes.

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 the Departmental Representative's approval for use of earth forms framing openings not indicated on drawings.

.3 Hand trim sides and bottoms and remove loose earth from earth forms before placing concrete.

.4 Fabricate and erect falsework in accordance with CSA S269.1.

.5 Do not place shores and mud sills on frozen ground.

.6 Provide site drainage to prevent washout of soil supporting mud sills and shores.

.7 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.

.8 Align form joints and make watertight.

.1 Keep form joints to minimum.

.9 Use 25 mm chamfer strips on external corners and/or 25 mm fillets at interior corners, joints, unless specified otherwise.

.10 Form chases, slots, openings, drips, recesses, expansion and control joints as indicated.

.11 Construct forms for architectural concrete, and place ties as directed.

.1 Joint pattern not necessarily based on using standard size panels or maximum permissible spacing of ties.

.12 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.

.13 Clean formwork in accordance with CSA-A23.1/A23.2, before placing concrete.

.14 When slip forming is used, submit details as per Article 1.4 of section 01 33 00 –Submittal Procedures.

.15 Surface devices for all the formwork ties must be removed and the visible holes, after backfilling, must be sealed.

3.2 REMOVAL AND RESHORING

.1 Leave formwork in place for following minimum periods of time after placing concrete.

.1 3 days for walls and sides of beams.

.2 3 days for columns.

.3 28 days for beam soffits, slabs, decks and other structural members, or 7 days when replaced immediately with adequate shoring to standard specified for falsework.

.4 3 days for footings and abutments.

.2 Remove formwork when concrete has reached 80% of its design strength or minimum period noted above, whichever comes later, and replace immediately with adequate reshoring. Obtaining the compressive strength of 80% must be verified by tests on samples cured under the same conditions as the concrete of the structure in order to authorize the stripping of the formwork.

.3 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.

.4 Space reshoring in each principal direction at not more than 3000 mm apart.

.5 Re-use formwork and falsework subject to requirements of CSA-A23.1/A23.2.

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 01 33 00 – Submittal Procedures

.2 Section 03 10 00 – Concrete Forming, Temporary Formwork and Accessories

.3 Section 03 30 00 – Cast-in-Place Concrete

.4 Section 03 30 51 – Concrete for Wharf Deck

1.2 REFERENCES

.1 Unless otherwise indicated, refer to latest edition and amendments of following standards prevailing at effective date of Contract.

.2 American Concrete Institute (ACI)

.1 ACI 315R-04, Manual of Engineering and Placing Drawings for Reinforced Concrete Structure.

.2 ACI 315-99, Details and Detailing of Concrete Reinforcement.

.3 ASTM International

.1 ASTM A1064/A1064-M-15, Standard specification For Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed for Concrete.

.2 ASTM A143/A143M-07 (C2014), Standard Practice for Safeguarding Against Embrittlement of Hot- Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement.

.4 CSA International

.1 CSA-A23.1-09/A23.2-F14, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.

.2 CAN/CSA-A23.3-F14, Design of Concrete Structures.

.3 CSA-G30.18-09 (2014), Carbon Steel Bars for Concrete Reinforcement.

.4 CSA-G40.20/G40.21-04-F13, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

.5 CAN/CSA-G164-M92 (C2003), Hot Dip Galvanizing of Irregularly Shaped Articles.

.6 CSA W186-M1990 (C2012), Welding of Reinforcing Bars in Reinforced Concrete Construction.

.7 CAN/CSA G30.3-M-1983 (C1998), Cold Pulled Steel Wire for Concrete Reinforcement.

.5 Reinforcing Steel Institute of Canada (RSIC)

.1 RSIC-2004, Reinforcing Steel Manual of Standard Practice.

1.3 DOCUMENTS/SAMPLES SUBMITTALS FOR APPROVAL/INFORMATION

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

.2 Prepare reinforcement drawings in accordance with Manual of Standard Practice.

.3 Shop Drawings

.1 Submit drawings stamped and signed by professional engineer registered or licensed in province of Quebec, Canada.

.1 Indicate placing of reinforcement and:

.1 Bar bending detail.

.2 Lists.

.3 Number 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, according to prescriptions of RSIC's "Manual of Standard Practice".

.5 Indicate sizes, spacings and locations of chairs, spacers and hangers.

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

1.4 DELIVERY, STORAGE AND HANDLING

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

.2 Storage and Handling Requirements

.1 Store materials off ground and in accordance with manufacturer's recommendations in clean 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 the Departmental Representative.

.2 Reinforcing steel: high-bond billet steel, grade 400 or 500, deformed bars to CSA-G30.18, unless indicated otherwise. Weldable reinforcing steel acceptable.

.3 Reinforcing steel: high-bond weldable low-alloy steel deformed bars to CSA-G30.18.

.4 Welded steel wire fabric: to ASTM A1064/A-1064M.

.1 Provide in flat sheets only.

.5 Welded high-bond deformed steel wire fabric: to ASTM A1064/A1064M.

.1 Provide in flat sheets only.

.6 Tying wire: annealed steel wire and cold drawn, conforming to CSA G30.3

.7 Wire deformed steel for the reinforcement of concrete: conforms to ASTM A1064 / A1064M.

.8 Chairs, bolsters, bar supports and spacers: to CSA-A23.1/A23.2.

.9 Mechanical splices: subject to approval of the Departmental Representative.

.10 Plain round bars: to CSA-G40.20/G40.21.

2.2 FABRICATION

.1 Fabricate reinforcing steel in accordance with CSA-A23.1/A23.2 or Reinforcing Steel Manual of Standard Practice from Reinforcing Steel Institute of Canada (RSIC).

.2 Obtain the Departmental Representative's written approval for locations of reinforcement splices other than those shown on placing drawings.

.3 Upon approval by the Departmental Representative, weld reinforcement in accordance with CSA W186.

.4 Ship bundles of bar reinforcement, clearly identified in accordance with bar bending details and lists.

.5 Unless otherwise indicated, the straight lengths of sealing and lengths of covering of the bars which must comply with CAN / CSA-A23.3.

2.3 SOURCE QUALITY CONTROL

.1 Provide the Departmental Representative with certified copy of mill test report of reinforcing steel, showing physical and chemical analysis as well as reinforcement galvanization reports, minimum 2 weeks prior to beginning work.

PART 3 EXECUTION

3.1 PREPARATION

.1 Galvanizing to include chromate treatment.

.1 Duration of treatment to be 1 hour per 25 mm of bar diameter.

.2 Conduct bending tests to verify galvanized bar fragility in accordance with ASTM A143/A143M.

3.2 FIELD BENDING

.1 Do not field bend or field weld reinforcement except where indicated or authorized by the Departmental Representative.

.2 When field bending is authorized, bend without heat, applying slow and steady pressure.

.3 Replace bars which develop cracks or splits.

3.3 PLACING REINFORCEMENT

.1 Place reinforcing steel as indicated on placing drawings in accordance with CSA-A23.1/A23.2.

.2 Prior to placing concrete, obtain the Departmental Representative's approval of reinforcing material and placement.

.3 Ensure cover of reinforcement is maintained during concrete pour.

.4 Ensure that the reinforcements are clean, free of dirt, form release oil or other contaminants. Clean reinforcing elements before pouring the concrete.

3.4 FIELD TOUCH-UP

.1 Not used.

3.5 CLEANING

.1 Progress Cleaning: carry out cleaning work.

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion, remove surplus materials, rubbish, tools and equipment from Work site.

.3 Waste Management: separate waste materials for reuse or recycling.

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 03 10 00 – Concrete Forming, Temporary Formwork and Accessories

.4 Section 03 20 00 – Concrete Reinforcing

.5 Section 03 30 51 – Concrete for Wharf Deck

1.2 REFERENCES

.1 Abbreviations and Acronyms:

.1 Portland cement: hydraulic cement, blended hydraulic cement (XXb – b denotes blended) and Portland-limestone cement.

.1 Type GU, GUb and GUL – General use cement.

.2 Type MS and MSb – Moderate sulphate-resistant cement.

.3 Type MH, MHb and MHL – Moderate heat of hydration cement.

.4 Type HE, HEb and HEL – High early-strength cement.

.5 Type LH, LHb and LHL – Low heat of hydration cement.

.6 Type HS and HSb – High sulphate-resistant cement.

.2 Fly ash:

.1 Type F – with CaO content less than 8 %.

.2 Type CI – with CaO content ranging from 8 % to 20%.

.3 Type CH – with CaO greater than 20%.

.3 GGBFS – Ground, granulated blast-furnace slag.

.2 Reference Standards:

.1 Unless otherwise indicated, refer to the latest edition and amendments of the following standards in use at the time of contract award.

.2 ASTM International

.1 ASTM C260/C260M-10a- Standard Specification for Air-Entraining Admixtures for Concrete.

.2 ASTM C309-11 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.

.3 ASTM C494/C494M-15a - Standard Specification for Chemical Admixtures for Concrete.

.4 ASTM C1017/C1017M-13e1 - Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.

.5 ASTM C882/C882M-13a Standard Test Method for Bond Strength of Epoxy-resin Systems Used with Concrete by Slant Shear.

.3 CSA International

.1 CSA A23.1/A23.2-F14, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.

.2 CSA A283-06 (R2011), Qualification Code for Concrete Testing Laboratories.

.3 CSA A3000-08, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).

1.3 DOCUMENTS/SAMPLES SUBMITTALS FOR APPROVAL/INFORMATION

.1 Submit required documents and samples compliant to section 01 33 00 – Documents and Samples to Submit.

.2 At least four (4) weeks prior to the work, submit to the Departmental Representative samples of the following materials proposed for the work:

.1 five (5) liters of curing compound;

.2 Three (3) kg of each type of cement addition;

.3 Ten (10) kg of each type of hydraulic cement;

.4 Five (5) kg of each adjuvant.

.5 10 kg of each type of fine aggregate and coarse aggregate.

.3 Submit results and test reports to the Departmental Representative for review, and in case of any deviation or any deviation from the formula or dosing parameters prescribed for the concrete mixture, do not continue work without prior written permission

.4 Concrete batches: submit accurate records of concrete batch set up the date and location of each batch, concrete quality, air temperature and specimens taken as directed by Article 3.4 - Field Quality Control.

.5 Concrete Transfer time: Submit to the Departmental Representative, for consideration, any deviation greater than the allowable maximum of 105 minutes for the delivery of concrete to the construction site and pouring of the batch.

.6 Submit two (2) copies of MSDSs required under WHMIS.

1.4 QUALITY ASSURANCE

.1 Submit to the Departmental Representative, minimum four (4) weeks prior to starting concrete work, valid and recognized certificate from plant delivering concrete.

.1 Provide test data, compliance certificates, technical data sheets, and certification by qualified independent inspection and testing laboratory that materials and mix designs used in concrete mixture that meet specified requirements.

.2 Minimum four (4) weeks prior to starting concrete work, submit proposed quality control procedures for review by the Departmental Representative on following items:

.1 Erection of temporary shoring

.2 Hot weather concrete.

.3 Cold weather concrete.

.4 Curing.

.5 Finishes.

.6 Formwork removal.

.7 Execution of joints.

.3 Quality Control Plan: submit a written report to the Departmental Representative, certifying compliance of cast in place concrete to the performance requirements set out in Article 2.2 – Performance Criteria.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Delivery and Acceptance Requirements:

.1 Concrete hauling time: deliver to site of Work and discharged within 105 minutes maximum after batching.

.1 Where applicable, any changes to the maximum transport time must be accepted in writing by the Departmental Representative and the producer of concrete, as indicated in CSA A23.1 / A23.2.

.2 Deviations must be submitted to the Departmental Representative for review.

.2 Concrete delivery: ensure continuous concrete delivery from plant meets CSA A23.1/A23.2.

PART 2 PRODUCTS

2.1 CALCULATIONS CRITERIA

.1 Alternative 1 - Performance: according to CSA A23.1 / A23.2 and indications of Article 2.4 Mixes.

2.2 PERFORMANCE CRITERIA

.1 Quality Control Plan: ensure concrete supplier is able to provide satisfactory concrete performance criteria established by the Departmental Representative, and provide for monitoring compliance of the material according to the requirements of Article 1.4 Quality Assurance.

2.3 MATERIALS

.1 Portland Cement: to CSA A3001, Type GU or GUB.

.2 Supplementary cementing materials: GUB with minimum 8% silica fume, to CSA A3001.

.3 Water: to CSA A23.1.

.4 Aggregates: to CSA A23.1/A23.2 and granitic.

.5 Admixtures:

.1 Air entraining admixture: to ASTM C260.

.2 Chemical admixture: to ASTM C494 and ASTM C1017. The Departmental Representative to approve set accelerating or set retarding admixtures during cold and hot weather placing.

.6 Cure Product: white, to CSA A23.1/A23.2 and ASTM C309 Type 1, chlorinated rubber.

.7 Bonding Agent:

.1 With a bond strength to 14 days of 20.7 MPa (fresh/fresh) in accordance with ASTMD C882.

2.4 MIXES

.1 Alternative 1 – Performance Method for specifying concrete: to meet the 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 Characteristics of fresh concrete:

.1 Slump: 80 mm ± 30 mm

.2 Quantity of air: 5% to 8%

.3 Maximum Ratio water/binder: 0.4

.3 Provide concrete mix to meet following hard state requirements:

.1 Durability and class of exposure: C-1.

.2 Compressive strength: 35 MPa minimum at 28 days.

.3 Aggregate size: 19 mm.

.4 Provide quality management plan to ensure verification of concrete quality to specified performance.

.5 Concrete supplier's certification: both batch plant and materials meet CSA A23.1 requirements.

.6 All aggregates proposed for the exterior concrete will be tested to CAN3-A23.2, for reactivity to alkalis.

PART 3 EXECUTION

3.1 PREPARATION

.1 Obtain the 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 facilitates placing with minimum of re-handling, and without damage to existing structure or Work.

.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 the 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, air temperature and test samples taken.

.10 Do not place load upon new concrete until authorized by the Departmental Representative.

3.2 INSTALLATION/APPLICATION

.1 Do cast-in-place concrete work to CSA A23.1/A23.2.

.2 Sleeves and inserts:

.1 Do not permit penetrations, sleeves, ducts, pipes or other openings to pass through any element, except where indicated or approved by the Departmental Representative.

.2 Where approved by the Departmental Representative, set sleeves, ties, pipe hangers and other inserts and openings as indicated or specified elsewhere.

.3 Sleeves and openings greater than 100 mm x 100 mm not shown must be reviewed by the Departmental Representative.

.4 Reinforcement must not to be disturbed or removed to place hardware parts. If inserts cannot be placed at prescribed location, modification must be approved in writing by the Departmental Representative before concrete pouring.

.5 Confirm locations and sizes of sleeves and openings shown on drawings.

.6 Place special inserts for strength testing as indicated and according to methods used for non- destructive testing of concrete.

.3 Anchor bolts:

.1 Set anchor bolts to templates in co-ordination with appropriate trade prior to placing concrete.

.2 Grout anchor bolts in preformed holes or holes drilled after concrete has set only after receipt of written approval from the Agency Representative.

.1 The drilled holes should have a diameter of at least 100 mm

.2 The diameter holes drilled after the concrete must exceed at least 25 mm of the used bolts and follow the manufacturer's recommendations.

.3 Protect anchor bolt holes from water accumulations, snow and ice build-ups.

.4 Set bolts and fill holes with shrinkage compensating grout.

.4 Drainage holes and weep holes:

.1 Form weep holes and drainage holes in accordance with Section 03 10 00 – Concrete Forming and Accessories. If wood forms are used, remove them after concrete has set.

.2 Install weep hole tubes and drains as indicated.

.5 Apply non-shrink grout under the railing post bearing plates in accordance with manufacturer’s recommendations to obtain a contact surface equal to 100% of the grouted area.

.6 Finishing and curing:

.1 Finish concrete to CSA A23.1/A23.2.

.2 Use procedures as reviewed by the Departmental Representative or those noted in CSA A23.1/A23.2 to remove excess bleed water. Ensure surface is not damaged.

.3 Unless otherwise indicated, finish surface with broom.

.4 Rub exposed sharp edges of concrete with carborundum to produce 3 mm minimum radius edges unless otherwise indicated.

.5 Ensure a wet concrete cure for seven (7) days following the pour.

.6 Departmental Representative must approve the proposed curing method at least 24 hours in advance.

3.3 SURFACE TOLERANCE

.1 Concrete surface tolerances must comply with CSA A23.1.

3.4 CONCRETE POURING IN HOT WEATHER

.1 When the outside temperature is greater than or equal to 25 degrees C or it is foreseeable that it be within 24 hours, the temperature of the concrete at the time of the casting must be less than 25 degrees C.

.2 Take the necessary measures to prevent overheating thick concrete elements during the three (3) days following the pouring.

3.5 CONCRETE POURING IN COLD WEATHER

.1 When the outside temperature is less than or equal to 5 degrees C, or it is foreseeable that it be within 24 hours, the temperature of the concrete at the time of pouring, must be 25 to 30 degrees C.

.2 Four three (3) days following the cast or until it is demonstrated that the concrete has reached a compressive strength of 7 MPa, maintaining the concrete temperature at 10 degrees C minimum for the elements of 0.3 m or less thickener, and 5 ° C minimum for thicker elements.

.3 When the outside temperature is below 5 degrees C, protect the concrete with insulation. If the outside temperature is below 0 degrees C, provide adequate shelter and heat by a method approved by the Departmental Representative.

.4 Protect concrete surfaces from direct contact flue gas heaters

3.6 FIELD QUALITY CONTROL

.1 Site tests: conduct following tests in accordance with Section 01 45 00 – Quality Control and submit report as described in Article 1.3 Documents/Samples Submittals for Approval/Information

.1 Concrete pours.

.2 Slump.

.3 Air content.

.4 Compressive strength: 7 day and 28 day.

.5 Air and concrete temperature.

.2 Inspection and testing of concrete and concrete materials will be carried out by testing laboratory designated by the Departmental Representative for review to CSA A23.1/A23.2.

.1 Ensure that the testing laboratory is certified according to CSA A283.

.3 Ensure that test results are transmitted to the Departmental Representative and to the Test

Laboratory Representative for them to exam during the meeting prior to the concrete casting.

.4 The Departmental Representative will pay for tests as specified in Section 01 29 83 – Payment Procedures for Testing Laboratory Services.

.5 Test laboratory representative will take additional test cylinders during cold weather concreting. 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 at 3, 7, 14 and 28 days.

.7 Inspection or testing by the Departmental Representative or Test Laboratory Representative will not augment or replace Contractor quality control nor relieve Contractor of his contractual responsibility.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 – Submittal Procedures

.2 Section 03 10 00 – Concrete Forming, Temporary Formwork and Accessories

.3 Section 03 20 00 – Concrete Reinforcing

.4 Section 03 30 00 – Cast-In-Place Concrete

1.2 REFERENCES

.1 Unless otherwise indicated, refer to the latest edition and amendments of the following standards in force at the time of the contract signing.

.2 Canadian Standards Association (CSA International)

.1 CSA-A23.1-F14/A23.2-F14 Concrete Materials and Methods of Concrete Construction Test Methods and Standard Practices for Concrete

1.3 DOCUMENTS/SAMPLES TO SUBMIT FOR APPROVAL/INFORMATION

.1 Submit required documents and samples as per section 01 33 00 – Submittal Procedures.

PART 2 PRODUCTS

2.1 MATERIALS

.1 Concrete mixes and materials: in accordance with Section 03 30 00 - Cast-in-Place Concrete.

.2 Reinforcing steel: in accordance with Section 03 20 00 - Concrete Reinforcing.

.3 Curing agent: in accordance with Section 03 30 00 - Cast-in-Place Concrete.

PART 3 EXECUTION

3.1 CONSTRUCTION

.1 Do concrete work in accordance with Section 03 30 00 - Cast-in-Place Concrete.

.2 If air temperature is below 5 degrees Celsius, comply with the requirements for concrete work in cold weather, in Section 03 30 00 – Cast-In-Place Concrete

.3 Check that the backfill between the deck supports on which the concrete slabs will be poured does not exceed the upper level of the deck supports, and are levelled to the satisfaction of the Departmental Representative, and they are clean and contain no trace of disturbed soil. If the work is performed in cold weather, make sure that this fill is not frozen

.4 Immediately prior to pouring of concrete, saturate the support surfaces with clean water. Avoid causing the formation of puddles and muddy or soft zones.

.5 Ensure that experienced concrete finishers are provided to finish the deck.

.6 It is forbidden to place directly on the fill or the longitudinals the reinforcement required in the slabs in preparation to raise them and support them on the liquid concrete during the concrete pour.

.7 Execute construction joints as shown on the drawings. Use rigid and straight forms and pour concrete in checkerboard panels to allow concrete shrinkage. Allow 24 hours before pouring a new panel between existing panels. In construction joints, apply an epoxy bond agent on the face of the concrete according to the supplier recommendation.

3.2 SLAB FINISHING

.1 Finish fresh concrete slab in accordance with CSA.A23.1-F14 standard, Chapter 22.

.2 Do not sprinkle dry cement or dry mixture of cement and sand on concrete surfaces.

.3 Execute slopes in the slab as indicated on the drawings.

.4 Immediately after concrete has been placed and consolidated, strike off surface.

.1 Correct immediately improper adjustment and operation which results in unsatisfactory consolidation and smoothness.

.5 Use floats to remove roughness or minor irregularities left by the strike board or the finisher and to seal concrete surface.

.6 When concrete has sufficiently hardened, give surface a uniform broom finish free from porous spots, irregularities, depressions, small pockets or rough spots. The allowable tolerance is Class C

.7 Once the concrete is hardened and the surface is dry, seal control joints and construction joints with back-up material and sealing joint, in accordance with Section 00 30 00 – Cast in place concrete.

.8 Finishing the wharf slab: Once the concrete has been poured, tighten and scree the surface using a straight edge, use a stiff bristle broom. This should produce streaks close to a depth of about 3-5 mm. The slab should be brushed transversely to the main direction of traffic.

END OF SECTION

PART 1 GENERAL

1.1 GENERAL

.1 For this section, the Contractor must execute the design, fabrication, delivery and installation of two new gangways.

1.2 SECTIONS CONNEXES

.1 Section 01 33 00 — Submittal Procedures

.2 Section 01 61 00 — Common Product Requirements

.3 Section 01 74 11 — Cleaning

.4 Section 01 74 21 — Construction/Demolition Waste Management and Disposal

.5 Section 35 51 25 – Floating Wharves

1.3 REFERENCES

.1 Unless otherwise indicated, refer to the latest publication and amendments of the following standards prevailing on the effective date of the contract..

.2 American Association for State Highway and Transportation Officials (AASHTO)

.1 AASHTO Standard Specifications for Highway Bridges.

.2 LFRD guide specifications for the pedestrian bridges.

.3 ASTM International

.1 ASTM B85/B85M-14, Standard Specification for Aluminum-Alloy Die Castings.

.2 ASTM B108/B108M-15, Standard Specification for Aluminum –Alloy Permanent Mold castings.

.3 ASTM B209M-14, Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (metric).

.4 ASTM B210M-12, Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes (metric).

.5 ASTM B211M-12e1, Standard Specification for Aluminum and Aluminum Alloy Rolled or Cold- Finished Bar, Rod and Wire (metric).

.6 ASTM B221M-13, Standard Specification for Aluminum and Aluminum –Alloy Extruded Bars, Rods, Wire, Profiles and Tubes. (metric)

.7 ASTM F593-13a, Standards Specification fort Stainless Steel Bolts, Hex Cap Screws, and Studs

.8 ASTM A123/A123M-15, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

.4 CSA International

.1 CSA/CAN S6-F14, Canadian Code for the calculations of road bridges

.2 CSA W47.2-F11 (c20150, Certification of Companies for Fusion Welding of Aluminum.

.3 CSA W59.2-FM1995(c2013), Welded Aluminum Construction.

.4 CSA W59-F13, Welded Steel Construction (metal arc welding).

.5 CSA W178.1-F14, Certification of Welding Inspection Organizations

.5 Aluminum Association (AA)

.1 AA DAF 45, Designation System for Aluminum Finishes.

1.4 DOCUMENTS/SAMPLES TO SUBMIT FOR APPROVAL/INFORMATION

.1 Submit documents/samples required in accordance with Section 01 33 00 - Submittal Procedures.

.2 The Contractor shall provide for approval (for each gangway):

.1 Full design brief of anchor block by an engineer, including the attachment with block and guide system on the floating docks.

.2 Provide in a timely manner the loads transmitted to the floating docks and the guide details of the gangway.

1.5 DELIVERY, STORAGE AND HANDLING

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

.2 Provide and implement protective wedges for transportation, lifting and storage of the elements.

.1 During the processing, transportation and installation, the necessary precautions must be taken to ensure that the gangways are not damaged.

.2 Do not encumber the shore with the elements.

.3 Do not subject the items to excessive stress

.3 Mark the mass on each of the two gangways and on items that weigh more than (3) tons.

.4 Ensure that no aluminum parts come into contact with the ground.

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

.1 New materials

.1 All materials used and provided to this project will be new materials.

.2 Any element manufactured will be a new construction.

.3 No used items will be accepted in this project

.4 Aluminum must comply with the 6401 standard of the Ministry of Transport of Quebec. The surface finish must be uniform and a shiny polished type "80 grit”

.5 Minimum thickness of aluminum:

.1 For items (excluding the railing), the minimum thickness of aluminum is 3.0 m.

.2 Aluminum Structure: profiles, plates and gussets of 6005-T5 alloy 6061-T6.

.6 Welding materials:

.1 Steel Structures: complies with CSA Standard W59;

.2 Articles of aluminum: complies with CSA Standard W59.2.

.3 Fasteners: bolts, nuts, washers stainless steel 304;

.4 Decking screws: Stainless steel pedestal 304.

.5 Extrusions, round bars and steel plates: comply with the CAN / CSA-M G40.21, grade 300W

.6 Aluminum anti-slip decking “Grip-Span” or equivalent: Product to submit for approval of the Departmental Representative.

.2 Materials

.1 Provide all hardware needed to install two gateways as specified in the plans and the references provided.

.2 Supply and install a new transition plate, and replace an existing transition plate.

.3 Collect and reinstall the two friction plates gateways

PART 3 EXECUTION

3.1 EXAMINATION

.1 Verification of Conditions: Before installing building elements, ensure that the state of the surfaces/materials previously implemented under other sections or contracts is acceptable and can perform the work in accordance with manufacturer's written instructions.

.1 Visually inspect surfaces materials in the presence of the Departmental Representative.

.2 Immediately inform the Departmental Representative of unacceptable conditions detected.

.3 Proceed with installation only after correcting the unacceptable conditions and written approval of the Departmental Representative.

3.2 PREPARATION

.1 Remove from steel or aluminum surfaces, dirt and unwanted deposits to the satisfaction of the Departmental Representative.

.2 Verify the location of the infrastructure components, the rating level of the connection points of the supporting elements and the location of the anchor bolts before mounting the gangway; if necessary, report any discrepancies to the Departmental Representative.

.3 Working near riverbanks or fill slope must be performed in accordance with written instructions of the Departmental Representative.

.4 During assembly, restrict pinning to the minimum necessary to bring the parts in position without enlarging or deforming the holes and without causing twisting, deformation or bending of the metal elements.

.1 Ream, if necessary, enlarge holes only if the Departmental Representative has given prior written authorization

.2 The diameter of the bore holes must not exceed by more than two (2) mm of the bolts used.

.5 Form and install the bearing elements as indicated.

3.3 DELIVERY, HANDLING AND ERECTION

.1 General

.1 The components of the structure must be handled carefully to avoid damage or deformation. The beams need to be raised by at least two (2) lifting points during handling and mounting operations.

.2 Aluminum structures must be cleaned of all dust and grease before leaving the factory.

.3 Unless otherwise specified in this Section or in the plans, assembly, installation of bolts and inspection of seams must be made in accordance with CAN / CSA S6 "Canadian Code of Highway Bridge calculations. "

.4 The location and elevation of the bearings should be checked by the Contractor, and any discrepancies must be corrected. The Contractor shall provide the Departmental Representative, at least seven (7) days before the placing of the beams, a location survey showing the location (longitudinally and transversely of the work), the elevation and leveling of each support unit in place and the corresponding values required on the plans.

.5 To prevent water contacting unpainted steel surfaces and staining the seats and the adjacent surfaces of the foundation units, these units must be adequately protected before the installation of the work. All stains on the beams or foundation units, such as oil and grease stains, should be removed once the work is completed.

.6 Galvanized steel surfaces to come in contact with each other at the time of assembly must be manually cleaned with a wire brush so as to remove the glossy appearance without altering the zinc coating zinc.

3.4 CLEANING

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

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

.3 Waste Management: separate waste materials for reuse/recycling in accordance with Section 01 74 21 -Construction/Demolition Waste Management and Disposal.

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

3.5 PROTECTION

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

.2 Repair damage to adjacent materials caused by structural aluminum for buildings installation.

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 03 30 00 – Cast-In-Place Concrete

.2 Section 05 14 15 – Aluminum Gangways

.3 Section 35 59 29 – Mooring Devices

1.2 REFERENCES

.1 ASTM International

.1 ASTM A53/A53M-12 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.

.2 ASTM A269-15a - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for Generalities Service.

.3 ASTM A307-14 - Standard Specification for Carbon Steel Bolts and Studs and Threaded Rod, 60,000 PSI Tensile Strength.

.4 ASTM A325-14, Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength

.5 ASTM A123/A123M-15, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

.6 ASTM D2369 – 01, Standard Test Method for Volatile Content of Coatings

.7 ASTM D2371 - 85(2010), Standard Test Method for Pigment Content of Solvent-Reducible Paints

.8 ASTM E1475 – 13, Standard Guide for Data Fields for Computerized Transfer of Digital Radiological Examination Data

.9 ASTM D562-10(2014), Standard Test Method for Consistency of Paints Measuring Krebs Unit (KU) Viscosity Using a Stormer-Type Viscometer

.10 ASTM D2621-87(2011), Standard Test Method for Infrared Identification of Vehicle Solids From Solvent-Reducible Paints

.11 ASTM D4414-95(2013) Standard Practice for Measurement of Wet Film Thickness by Notch Gages

.12 ASTM D3359-09e2 Standard Test Methods for Measuring Adhesion by Tape Test

.2 CSA International

.1 CSA G40.20/G40.21-f13, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

.2 CAN/CSA G164-M92 (C2003), Hot Dip Galvanizing of Irregularly Shaped Articles.

.3 CSA S16-f14, Design of Steel Structures.

.4 CSA W48-f14, Filler Metals and Allied Materials for Metal Arc Welding.

.5 CSA W59-f13, Welded Steel Construction (Metal Arc Welding).

.3 Health Canada / Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

.4 The Master Painters Institute (MPI)

.1 Architectural Painting Specification Manual - current edition.

1.3 DOCUMENTS/SAMPLES TO SUBMIT FOR APPROVAL/INFORMATION

.1 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for sections, plates, pipe, tubing, bolts, paints and primers. Include product characteristics, performance criteria, physical size, finish and limitations.

.2 Shop Drawings:

.1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Québec, Canada.

.2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

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 manufacturer's written instructions.

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

.3 Storage and Handling Requirements:

.1 Store materials in on the ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Replace defective or damaged materials with new.

PART 2 PRODUCTS

2.1 MATERIALS

.1 Steel sections and plates: to CSA G40.20/G40.21, Grade 300W or350W.

.2 Steel pipe: to ASTM A53/A53M Class B series.

.3 Welding materials: to CSA W59.

.4 Welding electrodes: to CSA W48 Series.

.5 Bolts and anchor bolts: to ASTM A307, except where noted on drawings.

.6 Framing Bolts: to ASTM A-325 and galvanized, except bolts for assembly bolts, A-325 non galvanized

.7 Grout: non-shrink, non-metallic, flowable, 25 MPa at 24 hours.

.8 Painting: data sheets for paints and primers must be submitted to the Department.

2.2 METAL FABRICATION- GENERAL

.1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.

.2 Use self-tapping shake-proof flat headed screws on items requiring assembly by screws or as indicated.

.3 Where possible, fit and shop assemble work, ready for erection.

.4 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

2.3 ISOLATION COATING

.1 Isolate aluminum from following components, by means of bituminous paint:

.1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.

.2 Concrete, mortar and masonry.

.3 Wood.

2.4 SHOP PAINTING AND GALVANISING

.1 When required, all components must be galvanized to CAN / CSA-G164 at a rate of 600 g / m², Provide all the construction arrangements for galvanization of the structure

.2 New cleats on floating docks, the wharf's corner steel plate, existing cleats and existing electrical station on wharf, will receive a paint system

.3 Painting galvanized steel bollards and corner steel plate :

.1 Preparation of steel to SSPC-SP16, profile 1.5 mils minimum

.2 Workshop painting of galvanized steel:

.1 Brush the weld seams and sharp edges with a brush before spraying each layer for the intermediate coat and finish coat.

.2 One coat of primer: hot galvanizing

.3 One coat intermediate: 2.6 to 7 mils dry, epoxy, high rate of solids

.4 One topcoat : 4-6 mils dry, finish epoxy polysiloxane base.

.3 Colour

.1 Intermediate Color: medium gray

.2 Finish: Black

.4 Painting existing wharf's cleats :

.1 Preparation of steel to SSPC-SP6, profile 1.5 mils minimum

.2 One coat intermediate: 2.6 to 7 mils dry, epoxy, high rate of solids

.3 One topcoat : 4-6 mils dry, finish epoxy polysiloxane base.

.4 Colour :

.1 Intermediate Color: medium gray

.2 Finish: Black

.5 Painting existing electrical station :

.1 Preparation of steel to SSPC-SP6, profile 1.5 mils minimum

.2 Finishing : Top with two coats of acrylic enamel with a minimum dry film thickness of 2 mils.

.3 Colour : yellow security

.6 The Contractor shall select a paint system equivalent to that described above, subject to approval by the Departmental Representative

2.5 PLATES, BOLTS FOR FENDERS AND FENDER PLATES

.1 As shown on drawings.

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 the Departmental Representative.

.2 Inform the 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 the Departmental Representative.

3.2 ERECTION

.1 Do welding work in accordance with CSA W59 unless specified otherwise.

.2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.

.3 Provide suitable means of anchorage acceptable to the 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 with bolts to CSA S16 or as indicated.

.7 Deliver items over for casting into concrete and building into masonry together with setting templates.

3.3 GALVANIZING AND PAINTING

.1 General

.1 Implementation

.1 When the work is performed on site, the contractor shall provide the Departmental Representative a plan outlining the steps provided. The performance of metal surface protection work on a portion of the structure must not alter in any way the quality of that already carried out or in the process of being done on another part.

.2 The contractor must submit to the Departmental Representative a provisional work plan outlining the details of the design and construction of containment and the residue collection device from the surface preparation, paint services.

.3 The study of this plan by the Departmental Representative deals only with the verification of the charges loaded on the gangway structure by the confinement and not on the design of scaffolding and platforms which constitute the exterior.

.4 After the construction of the confinement and after inspection by an engineer member of the Ordre des ingénieurs du Québec, the contractor must submit to the Departmental Representative a written notice signed by the engineer indicating that the enclosure built complies with the submitted plan. This notice must be provided as each time the enclosure is moved or altered. The notice shall also state the date and time of the inspection.

.5 Containment fences should be designed to support the weight of residue that can accumulate on the floor and not to cause stresses due to the wind that exceed the capacity of the structural system studied.

.6 Provisional work plan should mention the vertical and lateral loads to support and the location of the fasteners on the platform deck

.7 Containment zones

.1 The Contractor shall build the containment zone so as to confine the emission of dust inside the containment zone and allow recovery of all residues, such as abrasives, rust, old paint, zinc and fresh paint surplus, generated by the work surface preparation or painting.

.2 Where a total containment zone is stipulated in the plans and specifications, the contractor must install a negative pressure system with a dust collector in order to control dust and particles inside the enclosure. The negative pressure system must be operational for all the work of cleaning and surface preparation, including the final cleaning of the surfaces immediately prior to application of a protective coating.

.3 The containment zone should be watertight. The fabrics used for containing should be adequately strengthened to prevent their displacement or tearing when subjected to construction loads, wind forces or other environmental factors.

.4 Auxiliary lighting must be available and used as needed to improve visibility inside the containment zone. The minimum level of lighting should be 500 lux in areas where the work is performed.

.5 If the wind speed is too high to effectively confine the stripping residues inside the containment zone, the Contractor shall suspend stripping work.

.6 The Contractor must prevent leakage of dust and loss of residues from the floor or other containment components when they are moved or dismantled. The floor,

walls and joints of the containment zone should be cleaned with a vacuum cleaner before moving or dismantling of the containment system.

.7 When abrasives are recycled, no leakage is allowed during installation, recycling, cleaning and dismantling work of the recycling system.

.8 Residues accumulating inside the containment zone must be recovered before proceeding or painting

.9 Management of Residues

.1 Consecutive residues in the work surface preparation or painting must be collected in sealed containers, stored temporarily on site, transported and disposed.

.2 The residues characterized as hazardous materials must be shipped by the contractor to a transfer, recycling, treatment or disposal station of hazardous materials authorized by the Ministry of Sustainable Development, Environment, Wildlife and Parks. Transportation must be done by a licensee on the transport of hazardous materials. Hazardous materials must be accompanied by a shipping document compliant with the Regulations on the transport of hazardous materials. A copy of this document completed and signed by the shipper, the carrier and the recipient must be given to the Departmental Representative to confirm the shipment of waste from the site and receipt to the authorized recipient.

.3 Residues characterized as solid waste must be shipped by the contractor in a disposal or storage of solid waste authorized by the Ministry of Sustainable Development, Environment, Wildlife and Parks. A copy of the weighing coupons must be given to the Departmental Representative to confirm the receipt of residues to the authorised area.

.2 Galvanisation

.1 Certificate of Conformity

.1 For each delivery of galvanized steel elements, the Contractor must provide the Departmental Representative a certificate of conformity with the following information:

.1 name of the galvanizing company;

.2 date and place of galvanizing;

.3 Coating thickness;

.4 Coating adhesion;

.5 Coating quality

.2 Receiving inspection

.1 When receiving control is performed by the Departmental Representative, he is to make the tests for thickness, adhesion and coating quality according to the requirements of ASTM A123 / A123M "Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products."

.3 Surface Preparation

.1 Surfaces to be galvanized must be clean, free of paint, grease, rust, etc. Deposits and residues from welding, carbon deposits and paint deposits or thick rust must

be removed by an appropriate method. The final stripping must be done by immersion in a caustic solution followed by a clear water rinse and immersion in a bath of sulfuric or diluted hydrochloric acid. After stripping, the parts must be immersed in an aqueous solution of zinc chloride and ammonium.

.4 Galvanizing process

.1 Galvanizing must be done according to ASTM A123 / A123M "Standard Specification for Zinc (Hot-Dip Galvanized) Coatings is Iron and Steel Products."

.2 Steel surfaces of the bottom flange beams and bearings in contact with welds used to attach to the beams supporting devices must be ground after galvanizing

.3 Minimal galvanizing thickness is 100 microns except in the case of HSS steel tubes, where the minimum thickness is 75 microns.

.5 Protection of galvanized elements

.1 The contractor must protect galvanized parts against damage during handling and storage. .

.2 Member contacting with the lifting equipment, such as cables and chains, must be protected adequately.

.3 The storage of galvanized elements, with the exception of the reinforcements must be done so that air circulates between the parts, water does not accumulate and drains freely, and that there is no metal contact against galvanized metal parts. When installing galvanized elements of retainers, the Contractor has full responsibility to ensure that there is no white rust on these parts.

.6 Repair after galvanizing

.1 Damaged surfaces with a width less than 2.5 cm must be repaired by applying by brush two coats of zinc-rich coating with a minimum content of 87% metallic zinc in the dry film. Moreover, on the same workpiece, the total area to be repaired by zinc-rich coating should be less than 0.5% of the total surface thereof. Damaged surfaces must be cleaned beforehand according to the requirements of the standard SSPC-SP 11 "Power Tool Cleaning to Bare Metal." The minimum total thickness of the dry film coating should be 130 µm..

.2 Damaged surfaces with a width greater than 2.5 cm and the area of the damaged parts totaling more than 0.5% of the total surface of the part to be repaired or re-galvanised by metallization. In this, the damaged surfaces must be cleaned beforehand according to the requirements of SSPC-SP standard 5/NACE No. 1 "White Metal Blast Cleaning" or SSPC-SP standard 11 "Power Tool Cleaning to Bare Metal." The minimum thickness of the metallized coating should be 130 µm.

.3 Painting of Steel Surfaces

.1 Materials

.1 Paints and paint systems based on zinc and high performance of which must be consistent with the standards 10102 and 10104 of the Ministry of Transport of Quebec.

.2 Paint and organic paints and maintenance systems must be respectively consistent with standards 10103 and 10104 of the Ministry of Transport of

Quebec.

.2 Quality Assurance

.1 Certificate of conformity

.1 For each delivery of paint, the contractor must provide the Departmental Representative a certificate of conformity containing the following information for each production:

- The paint manufacturers name;
- The paint name;
- The lot number of production.

.2 Production batch corresponds to a batch number. In terms of the zinc powder, a production lot corresponding to a manufacturer's code. The results of the following tests:

- Non-volatile content (% by weight) according to the requirements of ASTM D2369 "Standard Test Method for Volatile Content of Coatings";
- Pigment content (mass%) according to the requirements of ASTM D2371 StandardTest Method for Pigment Content of Solvent reducible Paints";
- Density (kg / l) according to the requirements of ASTM D1475 ASTM D1475 « Standard Test Method for Density of Liquid Coatings, Inks, and Related Products »;
- Consistency (Stormer) (KU) according to the requirements of ASTM D562 « Standard Test Method for Consistency of Paints Measuring Krebs Unit (KU) Viscosity Using a Stormer Type Viscometer ».

.3 The compliance test results are verified by reference to the values appearing on the homologation approval of lists of paint systems. A tolerance is associated with each value for accreditation.

.4 As additional verification of painting, the Contractor shall, at the request of the Departmental Representative, provide the infrared spectra of the components of the paint according to the requirements of ASTM D2621 "Standard Test Method for Infrared Identification of Vehicle Solids From Solvent reducible Paints ".

.2 Reception

.1 The Departmental Representative performs an acceptance test on paints; sample collection consists of:

- one-component paints and thinners, two (2) samples of 1 L each;
- For paints of 2 constituents, two (2) samples of 1 L each non-mixed component and collected in the proportions recommended by the paint manufacturer;
- When the paint system consists of paints with a moisture cure polyurethane resin component, the paint manufacturer must provide the Departmental Representative for each batch of samples two (2)1 L of each painting and diluent in the original unopened containers previously

.2 The samples are placed in 1 L, sealed, high-density polyethylene or metal containers with enamel interior.

.3 Implementation

.1 Preparation of steel surfaces

.1 Steel surfaces to be painted should be blasted by dry abrasive blasting without crystalline silica. According to the stipulations on the plans and specifications, the minimum degree of surface preparation must match one of the following types of care:

- SSPC-SP 16/NACE No. 2, Brush-off Blast Cleaning of Non-Ferrous Metals ";
- SSPC-SP6/NACE No. 3, described in the "Joint Surface Preparation Standard SSPC- SP6/NACE No. 3 (Commercial Blast Cleaning)" standard

.2 The degrees of rust on unpainted steel surfaces and degrees of preparation abrasive blasting of steel corresponding to these degrees of rust surfaces are illustrated by a series of photographs contained in the SSPC standard -Vis 1-02 "Guide and Reference Photographs for Steel Surfaces Prepared by Dry Abrasive Blast Cleaning". These photographs should be used as examples only, and only to supplement the written descriptions of the types of care, which are the only provisions to be observed.

.3 Inaccessible surfaces stripping by dry abrasive blasting must be stripped to obtain a minimum level of preparedness to meet the standard SSPC-SP 11 "Power Tool Cleaning to Bare Metal" if the type of care is stipulated in quotes SSPC-SP 10/NACE No. 2 or SSPC-SP standard 15 "Commercial Grade Power Tool Cleaning" if the type of care stipulated in the quote is SSPC-SP6/NACE No. 3. These degrees of preparation are shown through a series of photographs contained in SSPC-VIS Standard 3 "Visual Standard for Power and Hand Tool Cleaned Steel".

.4 Dust and other dirt on the surfaces to be covered as a result of stripping as well as the surfaces of floors, walls and joints of the painting containment zone should be removed using a compressed air jet or vacuum cleaner.

.2 Painting

.1 The contractor must submit to the Departmental Representative data sheets and MSDS of the paints and thinners he proposes to use

.2 The painting must be done according to the requirements of the technical data of the paint manufacturer. In the absence of indication in relation to a minimum surface profile of the steel to be respected, it must be between 38 microns is 75 microns.

.3 Application Deadline

.1 Any cleaned surface must be covered with a first coat of paint as soon as possible after the surface preparation and before the onset of surface rust, but not exceeding eight hours when a paint system zinc-based or high performance certified respectively according to standard 10102 or 10104 of the Ministry of Transport of Quebec is used, and 24 hours in the case of a system of certified organic or maintenance paints, respectively, according to standard 10103 or 10104 the Ministry of Transport of Quebec

.2 The topcoat should be applied as specified by the manufacturer's product

data, without exceeding a maximum period of 7 days following the application of the first coat of paint.

.4 Conditions of application

.1 The paint should be applied on a moisture-free, dust-free surface:

- The contractor must apply the paint when:
  - the air temperature and the surface to be coated is greater than 5 ° C;
  - The temperature of the surface to be coated is above the dew point plus 3;
  - The already applied paint layer is sufficiently hardened.

.2 When applying a paint hygroréactive (moisture-curing), the requirements for temperature and humidity must be those specified in the data sheets, and be confirmed by the manufacturer.

.3 When applying a zinc-based paint and inorganic binder, the percentage of relative humidity should be greater than 40%.

.5 Application

.1 Before applying each of the first two layers of the paint system, rivets, bolts and non- galvanized nuts, welds, joints of assembled parts and corners and sharp edges should be completely painted using a brush. The paints used for the brush painting must be the same as those used for the first two layers of the system. However, an organic zinc-based paint should be applied on the bolts if a zinc paint and inorganic binder is used as the first layer of the system.

.2 Each layer of paint should be applied uniformly with a spray gun. Where indicated in the data sheets, the paint must be continuously stirred during application. All streaks or other imperfections should be wiped away. All surfaces that cannot be adequately painted by spray gun must be brush painted.

.3 Contact surfaces of the parts to be bolted together must be painted with a primer only. The steel surfaces of the bottom flange beams contacting the welds used to attach devices to the support beams must not be painted.

.4 Where the main beams are shop painted, all surfaces of construction splice plates which will be exposed after assembly may only be coated with the primary coating (galvanizing or zinc-based paint of an approved system) in the fabrication shop.

.5 When horizontal and cross bracing diaphragms and curved bridges must be shop painted, all exposed surfaces of the assembly in contact and in the vicinity of the components of the assembled bolts (bolt, nut and washer) should only be coated with the primary coating (galvanizing or zinc-based paint of an approved system) at the factory.

.6 After assembly is completed and just before on-site painting, all surfaces covered in factory with a primary protection, and exposed surfaces of bolts, nuts and washers must be degreased and cleaned in order to have a clean surface, free of any contaminants, and according to paint manufacturer's recommendations, if necessary. When these surfaces are

galvanized, preparation by abrasive blast in accordance with SSPC-SP standard 7/NACE No. 4 is required to obtain a minimum roughness. An abrasive low to medium hardness is required to avoid excessive damage to the zinc coating.

.7 The painting of all surfaces covered the factory with a primary protection, and exposed surfaces of bolts, nuts and washers must be completed on site in accordance with the requirements specified for the system to protect adjacent surfaces. The paint system and the color of the topcoat must be identical to those used in the factory.

.8 Surfaces of the metal parts in contact with the concrete must be painted over a 25 mm width around the entire perimeter.

.9 Dry film thickness of each layer of paint must in all respects, conform to minimum thickness specified by the paint manufacturer in the approval process.

.6 Thickness Determination

.1 The contractor must measure the thickness of the paint wet film during application to ensure obtaining, as the work progresses, the dry film thickness specified after drying.

.2 The thickness of the wet film of the different layers of paint should be determined according to the requirements of ASTM D4414 "Standard Practice for Measurement of Wet Film Thicknesses by Notch Gages".

.3 The thickness of the wet film thickness corresponding to the specified dry film is determined using the following formula:

$$H = T \times \left(\frac{100 + D}{}\right) B$$

- H = T x ((100 + D) / B) H: wet film thickness (in µm)
- thickness specified dry film (in µm)
- Percentage volume of diluent added, if necessary
- volume percentage of non-volatile material material
- The dry film thickness of the various layers of paint should be determined according to requirements of the standard SSPC-PA 2 "Measurement of Dry Coating Thickness with Magnetic Gages".

.7 Adhesion

The film of the paint system must have a minimum adhesion of 3A according to the adhesion test "Test Method A - X Cut Tape Test" described in ASTM D3359 "Standard Test Method for Measuring Adhesion by Tape Test."

.8 Delivery and Handling

.1 The contractor must take precautions so that the coating does not suffer any breakage during shipping and handling.

.9 Retouching

.1 The contractor must take every precaution to minimize paint surfaces to retouch. .

.2 Painted surfaces that are altered during the execution of the work must be cleaned so as to remove any damaged paint and other contaminants.

After cleaning, dust and other dirt which cover the surface to be retouched must be removed.

.3 Retouching must be done on each altered layer by applying paint under the original system, the thickness specified. However, the alterations to be performed on a zinc- based paint and inorganic binder must done by applying a zinc-based layer and organic binder 65 .µm thick.

.4 Existing painted surfaces altered during the execution of works of alteration or repair of a steel structure must be retouched using the following procedure:

- Surfaces must be prepared by spraying dry abrasive-free crystalline silica or mechanical cleaning to obtain the minimum type of care SSPC-SP6/NACE No. 3 "Commercial Blast Cleaning" or SSPC-SP 15 "Commercial Grade Power Tool Cleaning ";
- After the preparation, dust and other dirt should be removed;
- Retouching is done by applying a system of hygroréactives paints, polyurethane resins to a component, to meet the following requirements :
  - a coat with polyurethane resins and aluminum pigments primer;
  - a coat with polyurethane resins topcoat; the color should be similar to that of the existing paint
  - a minimum total dry film thickness of 150 microns.-

.5 Where indicated in the data sheets, retouches to be made on paint with polyurethane resins beyond a period of 72 hours after application as a top coat require a light sanding to areas adjacent to the surfaces to retouch.

.6 Each layer must be dry before applying a subsequent layer.

3.4 CLEANING

.1 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with the Departmental Representatives instructions.

3.5 PROTECTION

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

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

END OF SECTION

PART 1 – GENERAL

1.1 RELATED SECTIONS

.1 Section 01 29 83 – Payment – Laboratory Testing Services

.2 Section 01 33 00 – Submittal Procedures

.3 Section 01 74 21 – Construction/Demolition Waste Management and Disposal

.4 Section 31 53 13.01 – Timber Cribwork

.5 Section 31 53 16 – Timber

1.2 REFERENCES

.1 American Wood-Preservers' Association (AWPA)

.1 AWPA M2-15, Standard for Inspection of Treated Wood Products.

.2 AWPA M4-15, Standard for the Care of Preservative-Treated Wood Products.

.2 Canadian Standards Association (CSA) / CSA International

.1 CSA O80 Series-15, Wood preservation

.2 CSA O322-15, Procedure for certification of pressure-treated wood materials for use in permanent wood foundations

.3 Best Management Practice for the use of Treated Wood in Aquatic Environments, CITW and WWPI, 1997 (BMP)

1.3 REGULATORY REQUIREMENTS

.1 Each piece or lot of treated wood must be labelled.

1.4 DOCUMENTS/SAMPLES TO BE SUBMITTED FOR APPROVAL/INFORMATION

.1 Submit the documents and samples required under Section 01 33 00 – Submittal Procedures.

.2 Documents to submit for quality assurance purposes

.1 Submit the certificates required under Section 01 33 00 – Submittal Procedures.

.2 Each piece of treated timber must have a certification stamp in compliance with CSA 0322.

.3 For pressure-treated wood products, submit the information listed below, which must be certified by the authorized signatory of the processing plant.

.1 The relevant data specified in AWPA M2 and the changes listed in the CSA 080 series under Supplementary Requirement to AWPA M2.

.2 Moisture content after drying of preservative-treated wood.

.3 The types of paints, stains, and clear finishes that may be applied to treated wood.

1.5 QUALITY ASSURANCE

.1 Factory inspection of pressure-treated materials will be carried out by a designated testing

laboratory, in accordance with AWPA M2 and with the modifications listed in the CSA O80 series under Supplementary Requirements to AWPA M2.

.2 Each piece of treated plywood or timber to be used in wood foundations must have a certification stamp in compliance with CSA 0322.

.3 Inspection and testing will be performed by a testing laboratory designated by the Departmental Representative.

.4 The cost of testing will be paid by the Departmental Representative, in accordance with Section 01 29 83 – Payment – Laboratory Testing Services.

1.6 WASTE MANAGEMENT AND DISPOSAL

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

.2 Preservative-treated wood must be separated from materials and equipment to be recycled or reused.

.3 Dispose of any treated ends, waste and sawdust in a landfill that accepts this type of material and notify the Departmental Representative.

PART 2 – PRODUCTS

2.1 MATERIALS

.1 Chemical preservatives:

.1 Water-soluble CCA product in compliance with the CSA 080 series.

PART 3 – EXECUTION

3.1 INCISING

.1 Timber more than 64 mm thick must be incised prior to treatment in compliance with section 9.8 of CSA 080.

3.2 PRESERVATION TREATMENT

.1 Treat materials in compliance with the requirements of the CSA 080 series for use in a marine environment. Use a water-soluble CCA-based preservative to obtain a retention rate of 24 kg/m^3.

.2 Apply preservation treatment in compliance with the recommendations of the Best Management Practices for the Use of Treated Wood in Aquatic Environments (BMP).

.3 After treatment with a water-soluble preservative, dry wood products to an acceptable moisture level.

3.3 ON-SITE TREATMENT

.1 Perform work in compliance with AWPA M4 and the changes listed in the CSA 080 series under the Supplementary Requirement to AWPA M2 section.

.2 Keep any chemical waste away from pieces of treated wood that have had a finishing product applied to them.

.3 Wood must be handled so as not to damage it and expose the untreated wood, or the product may be rejected.

.4 All holes must be filled with pressure-treated material. Unused holes must be filled with treated-wood plugs.

3.4 WOOD CUTTING

.1 On-site cuts, if authorized, must receive three (3) layers of preservative applied one after the other after the previous layer has dried.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 – Submittal Procedures

.2 Section 01 74 21 – Construction/demolition waste management and disposal.

1.2 REFERENCES

.1 American Society for Testing and Materials International, (ASTM)

.1 ASTM A307, Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.

.2 National Lumber Grades Authority (NLGA)

.1 Standard Grading Rules for Canadian Lumber.

1.3 SHOP DRAWINGS

.1 Submit required shop drawings in compliance with section 01 33 00 - Documents and samples to be submitted.

.2 Drawings must show the construction and assembly details, profiles, attachments and other related details.

.3 Drawings must specify the materials, finishes, thicknesses and hardware parts.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Transport, store and handle material and materials in compliance with section 01 61 00 – Common product requirements.

.2 Protect materials against humidity and damages during and after delivery.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Sort and recycle waste in compliance with section 01 74 21 – Construction/demolition waste management and disposal.

PART 2 PRODUCTS

1.6 MATERIALS

.1 Hardwood must meet the following standards:

.1 All wood varieties will comply with National Hardwood Lumber Association (NHLA).

.2 AWMAC custom grade, moisture content as specified.

.3 Wood varieties are Yellow Birch, Hard Maple or Oak.

.4 Wood to be untreated.

.2 Lag screw: made of galvanized steel, type and size appropriate for the application, in compliance with standard ASTM A-307.

PART 3 EXECUTION

1.7 IMPLEMENTATION

.1 Install sheathing, level and in alignment, at all locations specified in drawings.

.2 Solidly affix and anchor sheathing as specified on the plans.

.3 Use lag screws that are of the appropriate length. Work must be done with precision and be level, true and in alignment, at all locations specified in drawings.

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 Section31 23 33.01 – Excavating, Trenching and Backfilling.

.4 Section 32 11 16.01 – Granular Sub-base (Sub-foundation) and Non Frost-Susceptible Backfill

.5 Section 32 11 23 – Aggregate Base (lower Foundation and Upper Foundation)

.6 Section 35 31 24 – Production of Stone

1.2 REFERENCES

.1 ASTM International

.1 ASTM D4791-10, Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate.

1.3 DOCUMENTS/SAMPLES TO SUBMIT FOR APPROVAL/INFORMATION

.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 aggregate materials.

.3 Samples:

.1 Submit one (1) sample per type of aggregate.

.2 Allow continual sampling by the Departmental Representative during production.

.3 Provide the Departmental Representative with access to source and processed material for sampling.

.4 Install sampling facilities at discharge end of production conveyor, to allow the Departmental Representative to obtain representative samples of items being produced. Stop conveyor belt when requested by the Departmental Representative to permit full cross section sampling.

.5 Provide front end loader or other suitable equipment including trained operator for stockpile sampling as necessary. Move samples to storage place as directed by the Departmental Representative.

.6 Supply new or clean sample bags or containers according appropriate to aggregate materials.

.7 Pay cost of sampling and testing of aggregates which fail to meet specified requirements.

.8 Provide water, electric power and propane to the Departmental Representative laboratory trailer at production site.

1.4 DELIVERY, STORAGE AND HANDLING

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

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

.3 Storage: store washed materials or materials excavated from underwater 24 hours minimum to allow free water to drain and for materials to attain uniform water content.

PART 2 PRODUCTS

2.1 MATERIALS

.1 Aggregate quality: sound, hard, durable material free from soft, thin, elongated or laminated particles, organic material, clay lumps or minerals, free from adherent coatings and injurious amounts of disintegrated pieces or other deleterious substances.

.2 Flat and elongated particles of coarse aggregate: to ASTM D4791.

.1 Greatest dimension to exceed 5 times least dimension.

.3 Fine aggregates satisfying requirements of applicable section to be one, or blend of following:

.1 Screenings produced in crushing of quarried rock, boulders, gravel or slag.

.2 Reclaimed asphalt pavement.

.3 Reclaimed concrete material.

.4 Coarse aggregates satisfying requirements of applicable section to be one of or blend of following:

.1 Crushed rock.

.2 Gravel and crushed gravel composed of naturally formed particles of stone.

.3 Light weight aggregate, including slag and expanded shale.

.4 Reclaimed asphalt pavement.

.5 Reclaimed concrete material.

2.2 SOURCE QUALITY CONTROL

.1 The quality control plan for the aggregates will be integrated into the plan in section 35 31 24 – Production of Stone.

.2 If materials from proposed source do not meet, or cannot reasonably be processed to meet, specified requirements, locate alternative source.

.3 Advise the Departmental Representative four (4) weeks minimum in advance of proposed change of material source.

.4 Acceptance of material at source does not preclude future rejection if it fails to conform to

requirements specified, lacks uniformity, or if its field performance is found to be unsatisfactory.

PART 3 EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 GENERAL

1.1 GENERAL

.1 Rock-breaking for the work of the Fishermen's Large Wharf revitalisation will be done using a hydraulic rock breaker. The use of dynamite to break this rock is prohibited. The rock must be broken in the basin and under certain cribs, down to the level indicated on the drawings.

1.2 RELATED SECTIONS

.1 Section 01 35 29.06 – Health and Safety

.2 Section 01 35 43 – Environmental Procedures

.3 Section 01 74 21 – Construction/Demolition Waste Management and Disposal

.4 Section 31 23 33 01.01 – Excavating, Trenching and Backfilling

.5 Section 35 20 23 - Dredging

1.3 REFERENCES

.1 Reference Document

.1 Étude géotechnique, Agrandissement du grand quai des pêcheurs, Blanc-Sablon, Québec, 631672-0000-4GEE-PB, Qualitas, February 2016.

.2 Definitions:

.1 Rock: any solid material which cannot be removed by means of heavy duty mechanical excavating equipment with less than 1.5 m³ bucket and which must be previously broken with a hydraulic rock breaker. Frozen material not classified as rock.

.2 PPV: peak particle velocity.

1.4 DOCUMENTS/SAMPLES TO SUBMIT FOR APPROVAL/INFORMATION

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

.2 Submit for approval to Departmental Representative.

.1 Indicate proposed method of carrying out rock excavation work, protection measures for items such as flying rock, vibration, dust control and proposed measures of noise control. Include details on protective measures and the work calendar.

.2 The submitted document must indicate the type and capacity of the rock breaker and the excavator proposed and demonstrate that the equipment is capable of breaking the rock described in the geotechnical study.

1.5 DELIVERY, STORAGE AND HANDLING

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

.2 Packaging Waste Management: remove for reuse and return in accordance with Section 01 74 21 -
Construction/Demolition Waste Management

and Disposal.

1.6 ROCK MEASUREMENT

.1 Previous studies and work supervision:

.1 Carry out a detailed survey of the rock surfaces to break after having removed the sediments and soils.

.2 This survey must be done with the Departmental Representative. The rock profile will serve to calculate the theoretical volume of rock to break based on required elevations indicated in the drawings and specifications.

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

.1 Hydraulic rock breaker and loader necessary for breaking the rock to meet deadlines.

PART 3 EXECUTION

3.1 RESTRICTIONS IN THE WORK EXECUTION

.1 The work of rock breaking with a hydraulic rock breaker will be subject to the restrictions identified in the related sections.

3.2 ROCK EXCAVATION

.1 Co-ordinate this Section with Section 01 35 29.06 - Health and Safety Requirements.

.2 Remove rock to alignments, profiles, and cross sections as indicated

.3 Use rock removal procedures to produce uniform and stable excavation surfaces. Minimize over- breakage, and to avoid damage to adjacent structures.

.4 Excavate rock to horizontal surfaces.

.5 Remove boulders and fragments which may slide or roll into excavated areas.

.6 Correct unauthorized rock removal by using a stone mattress, at no extra cost.

3.3 REUSE OF BROKEN ROCK

.1 The Contractor may reuse the broken rock, if the stone produced meets the specifications for reuse.

3.4 CLEANING

.1 Clean in accordance with Section 01 74 11 - Cleaning.

.2 Rock Disposal:

.1 The reuse of broken rock in the new work is allowed if it meets the requirements for stones.

.2 Dispose of removed rock off site in accordance with Section 01 74 21 - Construction/demolition Waste Management and Disposal.

.3 Do not dispose removed rock into landfill. Send material to appropriate location as approved by Departmental Representative.

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 01 35 43 - Environmental Procedures

.2 Section 02 41 16 – Structure Demolition

.3 Section 31 05 16 – Aggregate Materials

.4 Section 31 23 16.26 – Rock Removal

.5 Section 31 32 19.01 – Geotextiles

.6 Section 33 11 16 – Site Water Utility Distribution Piping

1.2 REFERENCES

.1 Always refer to the most recent edition of the reference standards.

.2 American Society for Testing and Materials International (ASTM)

.1 ASTM C117-04, Standard Test Method for Material Finer than 0.075 mm (No.200) Sieve in Mineral Aggregates by Washing.

.2 ASTM C136-05, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

.3 ASTM D422-63 2002, Standard Test Method for Particle-Size Analysis of Soils.

.4 ASTM D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lb/ft) (600 kN-m/m).

.5 ASTM D1557, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lb/ft) (2,700 kN-m/m).

.1 ASTM D4318, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

.3 Canadian General Standards Bureau (CGSB)

.1 CAN/CGSB-8.1, Sieves, Testing, Woven Wire, Inch Series

.2 CAN/CGSB-8.2, Sieves, Testing, Woven Wire, Metric

1.3 DEFINITIONS

.1 Excavation classes: two classes of excavation will be recognized; common excavation and rock excavation.

.1 Rock: see section 31 23 16.26 – Rock Breaking and Removal.

.2 Common excavation: excavation of materials of whatever nature, which are not included under definitions of rock excavation.

.2 Unclassified excavation: excavation of deposits of whatever character encountered in Work.

.3 Waste material: excavated material unsuitable for use in Work or surplus to requirements.

.4 Borrow material: material obtained from locations outside area to be graded, and required for construction of fill areas or for other portions of Work.

.5 Recycled backfill material: material considered neutral, from various sources and modified to respond to the needs of the fill area.

.6 Unsuitable materials:

.1 Weak, chemically unstable, and compressible materials.

.2 Frost susceptible materials:

.1 Fine grained soils with plasticity index less than 10 when tested to ASTM D4318, and gradation within limits specified when tested to ASTM D422 and ASTM C136 : Sieve sizes to CAN/CGSB-8.2.

.2 Table:

Sieve Designation	% Passing
2.00 mm	100
0.10 mm	45 - 100
0.02 mm	10 - 80
0.005 mm	0 - 45

.3 Coarse grained soils containing more than 20 % by mass passing 0.075 mm sieve.

.7 Stabilized fill: very weak mixture of cement, concrete aggregates and water that resists settlement when placed in utility trenches, and capable of being readily excavated.

1.4 SUBMITTAL PROCEDURES

.1 Quality Control

.1 Submit condition survey of existing conditions if requested by the Departmental Representative.

.2 Submit for review by the Departmental Representative proposed dewatering methods.

.3 Submit to the Departmental Representative written notice at least 7 days prior to excavation work, to ensure cross sections are taken.

.4 Submit to the Departmental Representative written notice when bottom of excavation is reached.

.5 Submit to the Departmental Representative results, testing, report and inspection.

.2 Preconstruction Submittals:

.1 Submit construction equipment list for major equipment to be used in this section prior to start of Work.

.2 Submit files concerning the location of underground utility networks, which include location drawings of existing utilities on the grounds.

.3 Samples

.1 Submit required samples as needed.

1.5 QUALITY ASSURANCE

.1 Retain the services of a professional engineer registered or licensed in Canada, in the province of Quebec to undertake the design and inspection shoring works, bracing and recovery in work used during the performance of work

1.6 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling.

.2 Reuse excavated material when possible.

1.7 EXISTING CONDITIONS

.1 Examine soil report.

.2 Buried services:

.1 Before commencing Work, verify and establish location of buried services on and adjacent to site, and notify the Departmental Representative.

.2 Confirm locations of buried utilities by careful test pits.

.3 Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered.

.4 Arrange with the Departmental Representative for relocation of buried services that interfere with execution of Work.

.5 Remove obsolete buried services within 2 m of foundations, and cap cut-offs.

.6 Record location of maintained, re-routed and abandoned underground lines.

.7 Size, depth and location of existing utilities and structures as indicated are for guidance only.
Completeness and accuracy are not guaranteed.

.3 Existing buildings and surface features

.1 Conduct, with the Departmental Representative, condition survey of existing buildings, trees and other plants, lawns, fencing, service poles, wires, rail tracks, pavement, survey bench marks and monuments which may be affected by Work.

.2 Protect existing buildings and surface features from damage while Work is in progress. In event of damage, immediately make repair as directed by the Departmental Representative.

PART 2 PRODUCTS

2.1 MATERIALS

.1 Fill CG-14

.2 Fill MG 20

.3 Fill MG-56

.4 Fill MG 112

.5 Fill (Type 3): Material approved by Departmental Representative from excavation or other sources, and free from roots, rocks larger than 75 mm in diameter, construction debris, ashes, cinders, sods, refuse or other deleterious materials.

.6 Borrow quarry pit run.

2.2 GRADATION OF MG 20, MG 56, MG 112, CG-14 FILL MATERIALS

.1 As follows :

Sieve Sizes (mm)	% passant (according to MTQ-2010)			
	CG 14	MG 20	MG 112	MG 56
112 mm	n.a.	n.a.	100	n.a.
80 mm	n.a.	n.a.	n.a.	100
56 mm	n.a.	n.a.	n.a.	82-100
31,5 mm	n.a.	100	n.a.	50-100
20 mm	100	90 – 100	n.a.	n.a.
14 mm	n.a.	68 – 93	n.a.	n.a.
5 mm	35 – 100	35 – 60	12 – 100	25-50
1,25 mm	n.a.	19 – 38	n.a.	n.a.
0,315 mm	n.a.	9 – 17	n.a.	4-18
0,160 mm	n.a.	n.a.	n.a.	n.a.
0,080 mm	0 – 10,0	2 – 7	0 - 10	2-7

Note: « none » (not used) means there are no requirements for sieve.

PART 3 EXECUTION

3.1 MEANS OF SEDIMENT EROSION CONTROL

.1 Set up temporary means to protect the loss of soil from rainwater runoff and erosion from wind, which could cause erosion and deposit of sediments into waterways.

3.2 PREPARATION WORK

.1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.

.2 Remove rocks, cut pavement curbs and retaining wall neatly along limits of proposed excavation in order that surface may break evenly and cleanly.

3.3 PREPARATION/PROTECTION

.1 Protect existing features.

.2 Keep excavations clean, free of standing water, and loose soil.

.3 Where soil is subject to significant volume change due to change in moisture content, cover and protect to the Departmental Representative's satisfaction.

.4 Protect natural and man-made features required to remain undisturbed.

.5 Protect buried services that are required to remain undisturbed.

3.4 STOCKPILING

.1 Stockpile excavated and fill materials in areas designated by the Departmental Representative.

.1 Stockpile materials in manner to prevent segregation.

.2 Protect fill materials from contamination.

.3 Implement sufficient erosion and sediment control measures to prevent sediment release off construction boundaries and into water bodies.

3.5 COFFERDAMS, SHORING, STRUTS AND UNDERPINNING WORK

.1 Protect walls of excavations by appropriate methods and in accordance with the requirements on the Health and Safety Act of the Province of Quebec pursuant to the requirements of the contract documents.

.2 Obtain the appropriate license from the competent authorities if it is necessary to temporarily divert a watercourse.

.3 Construct temporary works in depth, in height and in locations authorized by the authorized authorities.

.4 Perform the following during backfilling:

.1 Except as otherwise directed by the Departmental Representative, removing temporary sheet piling and shoring excavation works.

.2 Do not remove the braces before the fill level is reached the level of the latter.

.5 Do the following, once the infrastructure construction is complete:

.1 Remove cofferdams and the shoring and bracing structures.

.2 Remove the surplus materials from the site and perform the work required to restore the original system of waterways.

3.6 DEWATERING OF EXCAVATIONS AND HEAVE PREVENTION

.1 Keep excavations free of water while work is in progress.

.2 Submit to the Departmental Representative for his review, the details of the proposed dewatering methods of excavations and heave prevention, such as setting up dikes, establishments of well points and leveling of sheet piling.

.3 Protect open excavations against flooding and damage due to surface run-off.

.4 Dispose of water in accordance with Section 01 35 43 - Environmental Procedures collection runoff areas and in manner not detrimental to public and private property, or portion of Work completed or under construction.

.1 Provide and maintain temporary drainage ditches and other diversions outside of excavation limits.

.5 Provide flocculation tanks, settling basins, or other treatment facilities to remove suspended solids or other materials before discharging to storm sewers, watercourses or drainage areas.

3.7 EXCAVATION

.1 Advise the Departmental Representative at least 7 days in advance of excavation operations for initial cross sections to be taken.

.2 Excavate to lines, grades, elevations and dimensions as indicated.

.3 Remove any other obstructions on site during the excavation work.

.4 Excavation must not interfere with bearing capacity of adjacent foundations.

.5 Unless the Departmental Representative authorizes in writing, it is forbidden to dig more than 30 m of trench before installing the elements to bury and length of un-backfilled trench must not exceed 15 m at the end of a work day.

.6 Fill material and stockpiled material must be deposited at a sufficient distance from the trench, according to the Departmental Representative's indications.

.7 Restrict vehicle operations directly adjacent to open trenches

.8 Dispose of unsuitable or surplus excavated material from the site at location designated by the Departmental Representative.

.9 Do not obstruct flow of surface drainage or natural watercourses.

.10 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.

.11 Notify the Departmental Representative when bottom of excavation is reached.

.12 Obtain the Departmental Representative's approval of completed excavation.

.13 Remove unsuitable material from trench bottom including those that extend below required elevations to extent and depth as directed the Departmental Representative.

.14 Profile excavations by hand, strengthen the walls and remove all non-adherent materials and debris found there.

.15 If the materials of the excavation base were bothered, compact them to a density at least equal to that of the undisturbed soil.

.16 Install geotextiles according to manufacturer's requirements.

3.8 FILL MATERIAL AND COMPACTION

.1 Use fill material of the type indicated or prescribed below. The densities obtained by compacting are percentages of maximum densities calculated according to ASTM D1557.

3.9 BEDDING AND SURROUNDING OF UNDERGROUND SERVICES

.1 Place and compact granular material for bedding and surround of underground services.

.2 Bedding material and services surrounding materials must not be frozen.

3.10 BACKFILLING

.1 Do not proceed with backfilling operations until completion of following:

.1 Departmental Representative has inspected and approved installations.

.2 Departmental Representative has inspected and approved of construction below finish grade.

.3 Inspection, testing, approval, and recording location of underground utilities.

.4 Removal of concrete formwork.

.5 Removal of shoring and bracing; voids are filled with satisfactory soil material.

.2 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.

.3 Do not use backfill material which is frozen or contains ice, snow or debris unless authorized by the Departmental Representative.

.4 Proceed to filling with quarry run material avoiding impose undue pushed to the piles Proceed by spreading relatively uniform layers not exceeding one and a half times the maximum size of the biggest elements, to avoid any violent impact that could damage the works.

.5 Apply the fill material class A and class B in uniform layers not exceeding 150 mm compacted thickness up to specified levels. Compact each layer as follows: Class B equipment 95% of modified Proctor, class equipment to 95% of modified Proctor.

3.11 RESTORATION

.1 Upon completion of Work, remove waste materials and debris.

.2 Reinstate pavements and sidewalks disturbed by excavation to thickness, structure and elevation which existed before excavation.

.3 Protect newly graded areas from traffic and erosion and maintain free of trash or debris.

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 01 33 00 – Submittal Procedures

.2 31 23 33.01 – Excavating, Trenching and Backfilling

1.2 REFERENCES

.1 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-4.2 No. 11.2-M89 (November 2004), Bursting Strength - Ball Burst Test [Reaffirmation of November 2004].

.2 CAN/CGSB-148.1, Methods of Testing Geotextiles and Complete Geomembranes.

.1 No.2-M85, Methods of Testing Geosynthetics - Mass per Unit Area.

.2 No.3-M85, Methods of Testing Geosynthetics - Thickness of Geotextiles.

.3 No.6.1-93, Methods of Testing Geotextiles and Geomembranes - Bursting Strength of Geotextiles under No Compressive Load.

.4 No.7.3-92, Methods of Testing Geotextiles and Geomembranes - Grab Tensile Test for Geotextiles.

.5 No. 10-94, Methods of Testing Geosynthetics - Geotextiles - Filtration Opening Size.

.3 American Society for Testing and Materials International, (ASTM)

.1 ASTM D4491-99a (2009), Standard Test Methods for Water Permeability of Geotextiles by Permittivity.

.2 ASTM D4595-09, Standard Test Method for Tensile Properties of Geotextiles by the Wide- Width Strip Method.

.3 ASTM D4716-08, Standard Test Method for Determining the (In-Plane) Flow Rate per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head.

.4 ASTM D4751-04, Standard Test Method for Determining Apparent Opening Size of a Geotextile.

1.3 DOCUMENTS/SAMPLES TO SUBMIT FOR APPROVAL/INFORMATION

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

.2 Geotextiles must conform to recommended standards.

.3 The Contractor must provide, for the Departmental Representative’s approval, the shop drawings for each type of geotextile membrane used in this project.

1.4 DELIVERY, STORAGE AND HANDLING

.1 During delivery and storage, protect geotextiles from direct sunlight, ultraviolet rays, excessive heat, mud, dust, debris and rodents.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal paper, plastic, polystyrene and corrugated cardboard packaging material in appropriate on-site bins for recycling, in accordance with Waste Management Plan.

.4 Fold up metal banding, flatten and place in designated bins.

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

.1 Geotextile: Fabric of nonwoven synthetic fibers, supplied in rolls and at least with 85% of polypropylene, for installation in the following locations

.1 Roads: Between the subgrade and subbase

.2 In contact between stone work and wharf.

.2 Properties :

.1 Width : 3.5 minimum

.2 Length: as required

.3 Inhibitors added to the plastic base to resist deterioration from ultraviolet rays or heat.

.4 Minimum tensile strength according to CAN / 148.1 CGSIS No. T: 3

.1 Membrane under road: 550N

.2 Membrane in contact between stone work and wharf: 3300N

.5 Elongation min to CAN / CGSB 148.1 No 7.3 = 15%

.6 filtration opening to CAN / 148.1-CGASB No. 10 (F0S)

.1 Membrane under road: 180

.2 Membrane in contact between stone work and wharf: 30-75

.7 Tear resistance to CAN / CGSB 4.2 No. 12.2.

.1 Membrane under road : 250 N

.2 Membrane in contact between stone work and wharf: 1350 N

.8 Fasteners: screws, nuts, washers and galvanized nails in accordance with CAN / CSA-G40-21. Grade 300W, galvanized zinc and 600 g / m² according to ASTM A125 / A123M.

PART 3 EXECUTION

3.1 INSTALLATION

.1 Place geotextile material smooth and free of tension stress, folds, wrinkles and creases.

.2 Place geotextile material on sloping surfaces in one continuous length from toe of slope to

upper extent of geotextile.

.3 Overlap each successive strip of geotextile 600 mm over previously laid strip.

.4 Protect installed geotextile material from displacement, damage or deterioration before, during and after placement of material layers.

.5 Replace damaged or deteriorated geotextile to approval of the Departmental Representative.

.6 Place the layer of fill or riprap within twenty-four (24) hours after the placing of the geotextile, after approval of Departmental Representative.

3.2 CLEANING

.1 Remove construction waste from site and dispose of in accordance with regulatory requirements.

3.3 PROTECTION

.1 Vehicular traffic is not permitted directly on geotextiles.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 – Submittal Procedures

.2 Section 06 05 73 – Wood Treatment

.3 Section 35 51 25 – Floating Docks

1.2 REFERENCES

.1 American Wood-Preservers' Association (AWPA)

.1 AWPA M2-01, Standard for Inspection of Treated Wood Products.

.2 AWPA M4-06, Standard for the Care of Preservative-Treated Wood Products.

.2 Canadian Standards Association (CSA International)

.1 CSA G40.20/G40.21-F13, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

.2 CAN/CSA G164-M92 (c2003), Hot Dip Galvanizing of Irregularly Shaped Articles.

.3 CSA B111-1974 (R2003), Wire Nails, Spikes and Staples.

.4 CSA O121-F08 (C2013), Douglas Fir Plywood.

.5 CSA O141-F05 (C2014), Softwood Lumber.

.6 CSA O151-F09 (2014), Canadian Resinous Wood Plywood

.7 CSA W59-13, Welded Steel construction (Metal Arc Welding)

.8 W47.1-F09 (C2014) - Certification of companies for Fusion Welding of Steel Structures

.3 ASTM International

.1 ASTM A307-14, Standard Specification for Carbon Steel Bolts and Studs and Threaded Rod, 60,000 PSI Tensile Strength.

.4 ANSI/ASME

.1 ANISI/ASME B18.2.1 - 2012, Square, Hex, Heavy Hex, and Askew Head Bolts and Hex, Heavy Hex, Hex Flange, Lobed Head, and Lag Screws (Inch Series)

.5 National Lumber Grades Authority (NLGA)

.1 Standard Grading Rules for Canadian Lumber (February 2012)

1.3 DOCUMENTS/SAMPLES TO SUBMIT FOR APPROVAL/INFORMATION

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

.2 Technical Data Sheets

.1 Submit technical data sheets required as well as instructions and manufacturer's documentation concerning wood products and their accessories. The data sheets must indicate the characteristics of the products, the performance criteria, dimensions, limits and finishes.

1.4 QUALITY ASSURANCE

.1 Wood marking: stamp the classification of the organisation recognized by the Canadian Lumber Standards Accreditation Board (CLSAB).

.2 Marking plywood panels, oriented strand board (OSB) and large particles board and wood composite panels: according to the relevant standards of the CSA and ANSI.

.3 Each piece of lumber and plywood for preserved wood foundations to be identified by CSA O322 certified stamp.

1.5 DELIVERY, STORAGE AND HANDLING

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

.2 Delivery and Acceptance Requirements: deliver materials and equipment to site in original factory packaging, labeled with the name and address of the manufacturer.

.3 Storage and Handling

.1 Store materials and equipment so they do not rest on the floor in a clean, dry, well ventilated area, according to the manufacturer's recommendations

.2 Store the timber in order to protect against marks, scratches and scrapes and in accordance with ANSI.

.3 Store timber horizontally, evenly supported and open piled to permit air circulation when stored for prolonged periods

.4 When handling long timber, provide support at sufficient number of points, properly located to prevent damage due to excessive bending

.5 Handle treated timber with approved rope slings or other approved means of support that will not damage surface

.6 Do not use pointed tools for handling treated wood. Any wood handled with pointed tools will be rejected.

.4 Replace defective or damaged materials and equipment with new.

.5 Management of packaging waste: recover waste as directed by the construction waste management plan in accordance with Section 01 74 21 – Construction/Demolition Waste management and Disposal

1.6 PROTECTION

.1 Avoid dropping, bruising or breaking of wood fibres

.2 Avoid breaking surfaces of treated timber

.3 Do not damage surfaces of treated timber by boring holes or driving nails or spikes into them to support temporary material or staging.

PART 2 PRODUCTS

2.1 MATERIALS

.1 Timber according to section 35 51 25 – Floating docks.

.2 Other timber according to plans.

2.2 MISCELLANEOUS STEEL AND FASTENERS

.1 All miscellaneous steel and fastenings to be CSA G40.20/G40.21, General requirements relative to laminated steel construction and welds/ Construction steel, Grade 300W or 350W. All steel must be galvanized

.1 Wire nails, spikes, staples: to CSA-B111.

.2 Bolts, nuts, washers: to ASTM A307. All bolts must be galvanised.

.3 Galvanizing: will conform to CAN/CSA-G164 at a rate of 600 g/m².

.4 Lag-screws: to standard ANSI/ASME B18.2.1 galvanized.

.5 Welding: will be in accordance with C.S.A. W59 by welding company certified to article 2.1 of CSA W47.1 (Metal Arc Welding).

PART 3 EXECUTION

3.1 PREPARATION

.1 Install structural timbers to details shown on drawings or as specified

3.2 WHEELGUARD AND WHEELGUARD BLOCKING FOR WHARF

.1 Wheelguard timbers of treated wood will be 254 mm by 254 mm and will be in minimum lengths of 6.0 m, or as specially required with butt joints made over wheelguard blocking. Wheelguard timbers to be chamfered on top, 25 mm on each horizontal and vertical surface

.2 Wheelguard blocking for new construction (76 mm x 254 mm x 254 mm) spaced at 1500 mm centre to centre.

.3 Wheelguard to be secured with 25mm x 825 mm long drift bolts (2 per wheelguard block) as indicated on drawings.

.4 Wheelguards will be painted with two coats of colour: Safety Yellow (MTQ) or approved equivalent.

3.3 SHEATING

.1 Install hardwood sheating as indicated on the drawings along the face of the wharf.

.2 Secure each sheating with lag screws. All lag screws will be countersunk.

.3 Do not notch or cut sheating to provide straight wharf face. Continuous blocking will be installed behind sheating and shims to provide a straight face.

.4 Sheatings will be painted with two coats of colour: Safety Yellow (MTQ) or approved equivalent on a length of 600 mm in the upper section.

3.4 LADDER STRINGERS

.1 Ladder stringers of 203 mm x 203 mm will be of one single piece per full length.

.2 Ladder stringers must be painted on their full length with two (2) coats of coulour Safety Yellow (MTQ) or equivalent approved.

3.5 BOLT SIZING AND HOLING

.1 Drift Bolts - All drift bolts used in the work will have a length equal to thickness of timbers being fastened less 50 mm unless otherwise specified. Holes for drift bolts will be bored 2 mm smaller diameter than size of steel used and for full length of bolt.

.2 Machine Bolts - All machine bolts used in work will have a length equal to thickness of timbers being fastened plus thickness of washers plus 40 mm. Where bolts are countersunk, the length will be as above less depth of countersinking. All machine bolts will be threaded for 64 mm. All holes will be drilled same diameter as bolt.

.3 Lag Screws - All lag screws used in work will have a length equal to thickness of timbers being fastened less 50 mm and the depth of countersinking. Holes for lag screws will be drilled same diameter as shank for shank portion of screw and to inside thread diameter for threaded portion of screw and for full length. All lag screws will be countersunk, screwed, not driven in place and will have a washer under the head.

END OF SECTION

PART 1. GENERAL

1.1 RELATED REQUIREMENT

.1 Section 32 11 23 – Aggregate Base Courses (lower foundation and upper foundation)

1.2 REFERENCES

.1 Quebec Government

.1 CCDG 2015 and most recent addendums

.2 Recueil des essais du Laboratoire des chaussées

.3 BNQ 2560 – 114 / 2002 : Travaux en génie civil – Granulats

.2 ASTM International

.1 ASTM C117-04, Standard Test Methods for Material Finer Than 0.075 mm Sieve in Mineral Aggregates by Washing.

.2 ASTM C131-06, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

.3 ASTM C136-06, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

.4 ASTM D422-63(2007), Standard Test Method for Particle-Size Analysis of Soils.

.5 ASTM D698-07e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400ft-lbf/ft³) (600kN-m/m³).

.6 ASTM D1557-09, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000ft-lbf/ft³) (2,700kN-m/m³).

.7 ASTM D1883-07e2, Standard Test Method for CBR (California Bearing Ratio) of Laboratory Compacted Soils.

.8 ASTM D4318-10, Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils.

.3 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.

.2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.

PART 2. PRODUCTS

2.1 MATERIALS

.1 Sub-base required to fill the space between the excavated level and the lower level of the MG56 foundation, and backfill material next to structures must comply to the following requirements.

.1 Crushed, pit run or screened stone, gravel or sand

.2 During testing carried out according to BNQ standards, the granulometry of the CG112 materials after compaction must be within the following limits of the granulometric curve traced on semi- logarithmic paper and must be continuous and un-interrupted:

Sieve	% Passing
112 mm	100
5,0 mm	12 - 100
0,080 mm	0 – 10

.3 Liquid Limit : maximum 25, to ASTM D4318-84A;

.4 Plasticity Limit: maximum 6, to ASTM D4318-84A;

.5 Particles smaller than 0.02 mm: to ASTM D422, Maximum 3%.

.6 The physical and mechanical properties must meet the following requirements:

.1 Table of requirements

.2 Testing

BNQ Standards	Sub-base
Petrographic number -maximum	200
Durability $MgSO_4$–maximum percentage	25
Los Angeles – maximum percentage	50
Micro-Deval – maximum percentage	36
Fragmentation – maximum percentage	60
Organic materials – maximum percentage	0,8

.3 Los Angeles: "Aggregates determination of the abrasion resistance using the apparatus Los Angeles", the maximum is 32 instead of 50 in the case of crushed rocks limestone".

.4 Fragmentation: the percentage shown is the percentage by weight of the comminuted particles having at least one face fractured by crushing and retained on the sieve of 5 mm.

.5 Organic matter: LC-31-228 test standard.

.6 Standards: testing standards BNQ-2560-900 and BNQ-2560-450-are replaced by the BNQ- 2560-070 standard for aggregates from limestone quarry.

PART 3. EXECUTION

3.1 PLACING

.1 Place granular sub-base above subgrade is inspected and approved by the Departmental Representative.

.2 Place granular backfill next to structure to be backfilled once approved by the Departmental Representative.

.3 Ensure no frozen material is placed.

.4 Place material only on clean unfrozen surface, free from snow or ice.

.5 Place granular sub-base materials using methods which do not lead to segregation or degradation.

.6 Place material to full width in uniform layers not exceeding 300 mm compacted thickness. The Departmental Representative may authorize thicker lifts if specified compaction can be achieved.

.7 Shape each layer to smooth contour and compact to specified density before succeeding layer is placed.

.8 Remove and replace portion of layer in which material has become segregated during spreading.

3.2 COMPACTION

.1 Compaction equipment to be capable of obtaining required material densities.

.2 Equipment must be equipped with device that records hours of actual work, not motor running hours.

.3 Compact to density of not less than 90% corrected maximum dry density.

.4 Compact to density of not less than 95% corrected maximum dry density the last 150 mm of backfill.

.5 Shape and roll alternately to obtain smooth, even and uniformly compacted sub-base.

.6 Apply water as necessary during compaction to obtain specified density. If the soil is too humid, dry it by scarifying with appropriate equipment until the water content returns to normal.

.7 In areas not accessible to rolling equipment, compact to specified density with mechanical tampers approved by the Departmental Representative.

3.3 PROOF COMPACTION

.1 For proof compaction, use standard roller of 45 400 kg gross mass with four pneumatic tires each carrying 11 350 kg and inflated to 620 kPa. Four tires arranged abreast with centre to centre spacing of 730 mm maximum.

.2 Obtain written approval from the Departmental Representative to use non-standard proof compaction equipment.

.3 Proof compaction at level in sub-base as indicated. If non-standard proof compaction equipment is approved, the Departmental Representative will determine level of proof rolling.

.4 Make sufficient passes with proof compactor to subject every point on surface to three separate passes of loaded tire.

.5 Where proof compaction reveals areas of defective subgrade:

.1 Remove sub-base and subgrade material to depth and extent as directed by the Departmental Representative.

.2 Backfill excavated subgrade with sub-base material and compact in accordance with this section.

.3 Replace sub-base material and compact.

.6 Where proof compaction reveals areas of defective sub-base, remove and replace in accordance with this section at no extra cost.

3.4 SITE TOLERANCES

.1 Finished sub-base surface to be within 20 mm of elevation as indicated but not uniformly high or low.

3.5 PROTECTION

.1 Maintain finished sub-base in condition conforming to this section until succeeding base is constructed, or until granular sub-base is accepted by the Departmental Representative.

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 32 11 16.01 – Granular Sub-Base (sub-foundation) and non frost-suceptible backfill

1.2 REFERENCES

.1 Government of Quebec

.1 CCDG 2015 and most recent addenda.

.2 *Recueil des essais* of Laboratoire des chaussées.

.2 American Society for Testing and Materials (ASTM)

.1 ASTM C117-04, Standard Test Methods for Material Finer Than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.

.2 ASTM C131-06, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

.3 ASTM C136-06, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

.4 ASTM D698-07e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3).

.5 ASTM D1557-09, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000ft-lbf/ft^3) (2,700kN-m/m^3).

.6 ASTM D1883-07e2, Standard Test Method for CBR (California Bearing Ratio) of Laboratory Compacted Soils.

.7 ASTM D4318-10, Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils.

.3 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-8.1-88, Sieves Testing, Woven Wire, Inch Series.

.2 CAN/CGSB-8.2-M88, Sieves Testing, Woven Wire, Metric.

PART 2 PRODUCTS

2.1 MATERIALS

.1 Granular foundation: material in accordance with specifications and following requirements:

.1 Crushed stone or gravel consisting of hard durable particles free from clay lumps, cementation, organic material, frozen material and other deleterious materials.

.2 Physical and mechanical properties of aggregates of lower and upper granular bases must meet following requirements:

.1 Table of Requirements

.2 Tests

BNQ Standards	Sub-fondation
Maximum petrographic number	200
Durability $MgSO_4$ – maximum percentage	20
Los Angeles –maximum percentage	50
Micro-Deval – maximum percentage	33
Fragmentation – minimum percentage	100
Organic matter – maximum percentage	0.8

.3 Los Angeles: "Granulates –Determination of the abrasion resistance using the Los Angeles device," maximum 32 instead of 50 in case of limestone crushed stone.

.4 Degradation: percentage indicated is percent by mass of fragmented particles having at least one face fractured by crushing and retained on 5 mm sieve.

.5 Organic matter: to testing standard LC31-228.

.6 Standards: the testing standards BNQ-2560-900 and BNQ-2650-450 are replaced by the standard BNQ-2560-070 for aggregates from a lime quarry.

.7 Materials must not contain over 3.5% particles finer than 0.02 mm.

.8 Liquid limit: to ASTM D4318-[84], maximum 25.

.9 Plasticity index: to ASTM D4318-[84], maximum 6.

2.2 GRANULAR FOUNDATION

.1 The granular foundation is comprised of two layers:

.1 The lower foundation layer composed of 250 mm of MG56 placed on a geotextile membrane

.2 The upper foundation layer composed of 150 mm of MG20

.2 Gradations when compacted to be within limits specified below when tested to ASTM C136-82 and ASTM C117-80, and grading curve on semi-logarithmic chart must be continuous and unbroken.

Sieve	% passing	
	MG56	MG20
80 mm	100	100
56 mm	82-100	100
31, 5 mm	50-80	100
20 mm 14	n.a.	90-100
mm	n.a.	68-93
5 mm	25-50	35-60
1,25 mm	n.a.	14-38
0,315 mm	4-18	9-17
0,080 mm	2-7	2-7

PART 3 EXECUTION

3.1 SEQUENCE OF OPERATION

.1 Place granular base after sub-base is inspected and approved by the Departmental Representative.

.2 Installation

.1 Place geotextile membrane.

.2 Ensure no frozen material is placed.

.3 Place material only on clean unfrozen surface, free from snow and ice.

.4 Place material using methods which do not lead to segregation or degradation of aggregate.

.5 Place material to full width in uniform layers not exceeding 200 mm compacted thickness. The Departmental Representative may authorize thicker layers if specified compaction can be achieved.

.6 Shape each layer to smooth contour and compact to specified density before succeeding layer is placed.

.7 Remove and replace portion of layer in which material has become segregated during spreading.

.3 Compaction Equipment

.1 Ensure compaction equipment is capable of obtaining required material densities.

.4 Compacting

.1 Compact to density not less than 98% corrected maximum dry density.

.2 Shape and roll alternately to obtain smooth, even and uniformly compacted base.

.3 Apply water as necessary during compacting to obtain specified density. If soil is excessively moist, aerate by scarifying with suitable equipment until moisture content is corrected.

3.2 SITE TOLERANCES

.1 Finished base surface to be within plus or minus 10 mm of established grade and cross section but not uniformly high or low.

3.3 PROTECTION

.1 Maintain finished base in condition conforming to this Section until acceptance by the Departmental Representative.

END OF SECTION

PARTIE 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 01 33 00 – Submittal Procedures

.2 Section 01 74 21 – Construction/Demolition Waste Management and Disposal

.3 Section 32 12 16 – Asphalt Paving

1.2 REFERENCES

.1 Quebec Government

.1 CCDG 2015 and most recent addenda

.2 Recueil des essais du Laboratoire des chaussées.

.3 Enrobés : formulation selon la méthode LC.

.2 ASTM International

.1 ASTM D140-01 Standard Practice for Sampling Bituminous Materials.

.3 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-16.2-M89, Emulsified Asphalts, Anionic Type, for Road Purposes.

1.3 DOCUMENTS/SAMPLES TO SUBMIT

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

.2 Submit two (2) 1 to 4 L samples of asphalt tack coat material proposed for use in new, clean, airtight, sealed containers to the Departmental Representative, at least 2 weeks prior to beginning work.

.3 Sample asphalt tack coat material to: ASTM D140.

.4 Provide access on tank truck for the Departmental Representative to sample asphalt material to be incorporated into work to ASTM D140.

1.4 QUALITY ASSURANCE

.1 Upon request from the Departmental Representative, submit manufacturer's test data and certification that asphalt prime material meets requirements of this Section.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with ASTM D140.

.2 Provide, maintain and restore asphalt storage area.

1.6 WASTE MANAGEMENT AND DISPOSAL

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

.2 Send unused bituminous materials to their proper recycling installation.

PARTIE 2 PRODUCTS

2.1 MATERIALS

.1 Anionic emulsified asphalt: to CAN/CGSB-16.2, grade: SS-1 or SS-1h.

.2 Water: clean, potable, free from foreign matter.

2.2 EQUIPMENT

.1 Pressure distributor: Designed, equipped, maintained and operated so that asphalt material can be:

.1 Maintained at even temperature.

.2 Applied uniformly on variable widths of surface up to 5 m.

.3 Applied at readily determined and controlled rates at 0.2 L/m² with uniform pressure, and with allowable variation from any specified rate not exceeding 0.1 L/m².

.4 Distribute in uniform spray without atomization at temperature required.

.2 Equipped with meter, registering travel in metres per minute, visibly located to enable truck driver to maintain constant speed required for application at specified rate.

.3 Equipped with pump having flow meter graduated in units of 5 L or less per minute passing through nozzles and readily visible to operator. Pump power unit to be independent of truck power unit.

.4 Equipped with easily read, accurate and sensitive device which registers temperature of liquid in reservoir.

.5 Equipped with accurate volume measuring device or calibrated tank.

.6 Equipped with nozzles of same make and dimensions, adjustable for fan width and orientation.

.7 Equipped with nozzle spray bar, with operational height adjustment.

.8 Cleaned if previously used with incompatible asphalt material.

PARTIE 3 EXECUTION

3.1 APPLICATION

.1 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from the Departmental Representative.

.2 Apply asphalt tack coat only on clean and dry surface.

.3 Dilute asphalt emulsion with water at 1:1 ratio for application.

.1 Mix thoroughly by pumping or other method approved by the Departmental Representative.

.4 Apply asphalt tack coat evenly to pavement surface at rate as directed by the Departmental Representative.

.5 Paint contact surfaces of curbs, gutters, headers, manholes and like structures with thin, uniform coat of asphalt tack coat material.

.6 Apply asphalt tack coat only when air temperature greater than 10 degrees C and when

rain is not forecast within 2 hours minimum of application.

.7 Apply asphalt tack coat only on unfrozen surface.

.8 Evenly distribute localized excessive deposits of tack coat by brooming as directed by the Departmental Representative.

.9 Where traffic is to be maintained, treat no more than one half of width of surface in one application.

.10 Keep traffic off tacked areas until asphalt tack coat has set.

.11 Re-tack contaminated or disturbed areas as directed by the Departmental Representative

.12 Permit asphalt tack coat to set before placing asphalt pavement.

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 32 11 23 Aggregate Base

.2 Section 32 12 13.16 Asphalt Tack Coats

1.2 SAMPLES

.1 Inform the Departmental Representative of proposed source of aggregates and provide access for sampling two (2) weeks prior to beginning work.

.2 Submit samples of following materials proposed for use one (1) week prior to beginning work.

.1 One 5 L container of asphalt cement.

1.3 MATERIAL CERTIFICATION

.1 Submit viscosity-temperature chart for asphalt cement to be supplied showing either Saybolt Furol viscosity in seconds or Kinematic Viscosity in centistokes, temperature range 105 to 175 degrees C at least one (1) week prior to beginning work.

.2 Submit manufacturer's test data and certification that asphalt cement meets specification requirements.

.3 Submit calibration charts for each hot load and each cold load.

1.4 SUBMITTAL OF MIX DESIGN

.1 Submit asphalt concrete mix design and trial mix test results to the Departmental Representative at least one (1) week prior to beginning work

1.5 DELIVERY AND STORAGE

.1 Stockpile minimum 50 % of total amount of aggregate required before beginning asphalt mixing operation.

.2 When necessary to blend aggregates from one or more sources to produce required gradation, do not blend in stockpiles.

.3 When using a mixing drum dryer, stockpile fine aggregate separately from coarse aggregate.

.4 Provide approved storage, heating tanks and pumping facilities for asphalt cement, and have them approved.

PART 2 PRODUCTS

2.1 MATERIALS

.1 The paving will be composed of one (1) of EB-14 in compliance with the requirements of the Ministère des Transports du Québec and according to the thicknesses specified on the drawings.

PART 3 EXECUTION

3.1 EQUIPMENT

.1 Rollers: sufficient number of type and weight to obtain specified density of compacted mix.

.2 Haul trucks: sufficient number and of adequate size, speed and condition to ensure orderly and continuous operation and as follows:

.1 Boxes with tight metal bottoms.

.2 Covers of sufficient size and weight to completely cover and protect asphalt mix when truck fully loaded.

.3 In cool weather or for long hauls, insulate entire contact area of each truck box.

.4 Use only trucks which can be weighed in single operation on scales supplied.

.3 Hand tools:

.1 Lutes or rakes with covered teeth for spreading and finishing operations.

.2 Tamping irons having mass 12 kg minimum and bearing area not exceeding 310 cm^2 for compacting material along curbs, gutters and other structures inaccessible to roller. Mechanical compaction equipment, when approved by the Departmental Representative, may be used instead of tamping irons.

.3 Straight edges, 4.5 m in length, to test finished surface.

3.2 PREPARATION OF SURFACES TO COVER

.1 Apply layers of prime coat and tack coat prior to paving.

.2 Prior to laying mix, clean surfaces of loose and foreign material.

3.3 TRANSPORTATION OF MIX

.1 Transport mix to job site in vehicles cleaned of foreign material.

.2 Paint or spray truck beds with limewater, soap or detergent solution, or non petroleum based commercial product, at least daily or as required. Lift bucket to drain any excess solution.

.3 Schedule delivery of material for placing in daylight, unless the Departmental Representative approves artificial light for night placing.

.4 Deliver material to paver at uniform rate and in an amount within capacity of paving and compacting equipment.

.5 Deliver loads continuously in covered vehicles and immediately spread and compact. Deliver and place mixes at temperature within range as prescribed, but not less than 135 degrees C.

3.4 PLACING OF ASPHALT

.1 Obtain the Departmental Representative's approval of base, existing surface, tack coat prior to placing asphalt.

.2 Place asphalt concrete to thicknesses, grades and lines as indicated on the drawings or as directed by the Departmental Representative.

.3 Place asphalt mixtures only when air temperature is 5 degrees C minimum.

.4 When temperature of surface on which material is to be placed falls below 10 degrees C, provide extra rollers as necessary to obtain required compaction before cooling.

.5 Do not place hot-mix asphalt when pools of standing water exist on surface to be paved, during rain, or when surface is damp.

.6 Place asphalt concrete in compacted lifts of thickness as indicated on plans.

.1 A single layer of 100 mm minimum.

.7 Where possible do tapering and levelling where required in lower lifts. Overlap joints by not less than 300 mm. Verification of the profile must be done regularly by the Contractor with a 4.5 m straight edge.

.8 Where more than on layer of asphalt concrete is required, spread a fine skin of tack between the layers, according to the Departmental Representative's directions.

.9 Place individual strips no longer than 500 m.

.10 Commence spreading at high side of pavement or at crown and span crowned centerlines with initial strip.

.11 Spread and strike off mixture with self-propelled mechanical finisher.

.1 Construct longitudinal joints and edges true to line markings. The Departmental Representative to establish lines for paver to follow parallel to centerline of proposed pavement. Position and operate paver to follow established line closely.

.2 When using pavers in echelon, have first paver follow marks or lines, and second paver follow edge of material placed by first paver. Work pavers as close together as possible and in no case permit them to be more than 30 m apart.

.3 If segregation occurs, immediately suspend spreading operation until cause is determined and corrected.

.4 Correct irregularities in alignment left by paver by trimming directly behind machine.

.5 Correct irregularities in surface of pavement course directly behind paver. Remove excess material forming high spots using shovel or lute. Fill and smooth indented areas with hot mix. Do not broadcast material over such areas.

.6 Do not throw surplus material on freshly screed surfaces.

.12 When hand spreading is used:

.1 Use approved wood or steel forms, rigidly supported to assure correct grade and cross section.
Use measuring blocks and intermediate strips to aid in obtaining required cross-section.

.2 Distribute material uniformly without broad casting material.

.3 During spreading operation, thoroughly loosen and uniformly distribute material by lutes or covered rakes. Reject material that has formed into lumps and does not break down readily.

.4 After placing and before rolling, check surface with templates and straightedges and correct irregularities.

3.5 COMPACTING

.1 Roll asphalt continuously using established rolling pattern for test strip and to density of not less than 98% of maximum density determined for blow Marshall test strip. Joints must be compacted to a minimum of 96% of the maximum density of the Marshal sample gathered of the mix used.

.2 General:

.1 Provide rollers and as many additional rollers as necessary to achieve specified pavement density. When more than 2 rollers are required, 1 roller must be pneumatic tired type with a minimum weight of 20 metric tonnes) and as many others as necessary to obtain the maximum density specified for the asphalt layer.

.2 Start rolling operations as soon as placed mix can bear weight of roller without excess displacement of material or cracking of surface. Ensure that the temperature of the mix is within the specified limits for compacting as indicated on the asphalt certificate.

.3 Operate roller slowly initially to avoid displacement of material. Do not exceed 5 km/h for breakdown and intermediate rolling for static steel-wheeled and 8 km/h for pneumatic tired rollers.

.4 Overlap successive passes of roller by minimum of one-half width of the roller and vary pass lengths.

.5 Keep wheels of roller slightly moistened with water to prevent pick-up of material but do not over- water.

.6 Do not stop vibratory rollers on pavement that is being compacted with vibratory mechanism operating.

.7 Do not permit heavy equipment or rollers to stand on finished surface before it has been compacted and has thoroughly cooled.

.8 After traverse and longitudinal joints and outside edge have been compacted, start rolling longitudinally at low side and progress to high side.

.9 When paving in echelon, leave unrolled 50 to 75 mm of edge which second paver is following and roll when joint between lanes is rolled.

.10 Where rolling causes displacement of material, loosen affected areas at once with lutes or shovels and restore to original grade of loose material before re-rolling.

.11 The equipment and compaction work must not damage concrete slabs or other infrastructures adjacent to the asphalt.

.12 Do not drive on concrete slabs with a metal roller.

.3 Breakdown rolling:

.1 Begin breakdown rolling with static steel wheeled roller or vibratory roller immediately following rolling of transverse and longitudinal joint and edges.

.2 Operate rollers as close to paver as necessary to obtain adequate density without causing undue displacement.

.3 Operate breakdown roller with drive roll or wheel nearest finishing machine except when working on steep slopes or super-elevated sections.

.4 Use only experienced roller operators.

.4 Intermediate rolling:

.1 Use pneumatic-tired, steel wheel or vibratory rollers and follow breakdown rolling as closely as possible and while paving mix temperature allows maximum density from this operation.

.2 Rolling to be continuous after initial rolling until mix placed has been thoroughly compacted.

.5 Finish rolling:

.1 Accomplish finish rolling with two-axle or three-axle tandem steel wheeled rollers while material is still warm enough for removal of roller marks. If necessary to obtain desired surface finish, use pneumatic-tired rollers as directed by the Departmental Representative.

.2 Conduct rolling operations in close sequence.

3.6 JOINTS

.1 General:

.1 Prepare the vertical face to supply straight surfaces and profiles on which can be posed a new covering. Eliminate all non-adherent substances.

.2 All cold joints, when the temperature is less than 80°C, longitudal and transversal must be heated before the placing of asphalt concrete with an infrarouge heating device. The heating equipment must be installed on the paver and designed for the type of work. The equipment must heat the joints between 80°C and 120°C. The equipment must be approved by the Departmental Representative.

.3 Overlap by 100 mm on previous strip laid by the paver.

.4 Remove surplus material from surface of previously laid strip. Do not deposit on surface of freshly laid strip.

.5 Construct joints between asphalt concrete pavement and Portland cement concrete pavement as indicated.

.6 Paint contact surfaces of existing structures such as manholes, curbs or gutters with bituminous material prior to placing adjacent pavement.

.2 Transverse joints:

.1 Place and compact transverse joints to provide smooth riding surface.

.2 Offset joints by at least 2 m.

.3 Offset transverse joint in succeeding lifts by at least 600 mm.

.4 Cut back to full depth vertical face and tack face with thin coat of hot asphalt prior to continuing paving.

.3 Longitudinal joints:

.1 Before rolling, carefully remove and discard coarse aggregate in material overlapping joint with lute or rake.

.2 Roll longitudinal joints directly behind paving operation.

.3 During rolling with a static roller, overlap the new strip along a maximum width of 100

to 150 mm and then operate the roller to firmly pack fine particles across the width of the joint. Continue rolling until the seal is fully and properly compacted.

.4 During rolling with a vibrating roller, place the roller so that substantially the entire drum is on the new path with no more than 100 to 150 mm wide overlapped on the previously laid and compacted strip.

.5 Shift of at least 150 mm, the longitudinal seal in successive layers.

.6 Construct feather joints so that thinner portion of joint contains fine graded material obtained by changed mix design or by raking out coarse aggregate in mix. Place and compact joint to ensure joint is smooth and without visible breaks in grade. Locate feather joints as indicated.

3.7 FINISH TOLERANCES

.1 Each layer, inferior and superior must have a uniform texture, a firm surface without segregation and pitting, be regular and compliant to the transvers and longitudinal profiles specified.

.2 After final rolling of each layer, the Departmental Representative will check the slopes and surfaces. Finished asphalt surface to be within 5 mm of design elevation but not uniformly high or low. Finished asphalt surface not to have irregularities exceeding 5 mm when checked with 4.5m straight edge placed in any direction. The thickness of each layer must not vary more than 5 mm the average thickness specified by the rate of placement specified per square meter, this being transformed to thickness with the help of the net average density obtained during the compaction measurement.

.3 The verification of these irregularities is done with a 4.5 m straight edge that the Contractor must have at all times at the work site.

3.8 DEFECTIVE WORK

.1 The Contractor shall correct deficiencies of Article 3.7 that occur before the end of compacting, by loosening the asphalt mixture and adding or removing materials as needed. If these irregularities or these defects remain, even after the final compaction, quickly remove the top layer and spread a new layer of material to obtain an even and smooth surface and compact immediately to the specified density.

.2 The Contractor shall, at his own expense, repair areas that have signs of cracking or undulations.

.3 All surfaces which present segregation are found to be defective and should be repaired at the expense of the Contractor.

.4 The Contractor shall, at his own expense, correct noncompliant level adjustments under Article 3.8 of the surface of the asphalt and the places that hold water surface.

.5 Adjust roller operation and screed settings on paver to prevent further defects such as rippling and checking of pavement.

.6 The specifications concerning the physical characteristics mentioned in this specification must be met during production. The paving whose mixture does not meet the requirements of sections 3.1.4, 3.6.1 and the percentage of empty spaces will be judged defective and therefore rejected, unpaid and must be replaced by paving which conforms to the specifications, at the expense of the Contractor.

3.9 QUALITY CONTROL

.1 Control by laboratory

.1 Collect a minimum of two (2) samples of the mix. A comprehensive analysis should be performed on each sample. The briquettes (4) shall be made manually on site without heating the samples, applying 50 strokes/face.

.2 The rate may be reduced if production is not stable.

.2 Control by the Contractor

.1 The Contractor shall provide at his expense the analysis results for at least one sample of the asphalt product. The sample must be taken together with the laboratory of the Departmental Representative. A comprehensive analysis should be performed on this sample.

.2 Briquettes (4) shall be made of manually on site by applying 50 strokes/face and without heating samples of asphalt concrete.

END OF SECTION

PARTIE 1 RÉGENERAL

1.1 SECTION CONTENTS

.1 Equipment and machinery required to install aboveground fuel storage tanks for petroleum products.

1.2 RELATED SECTIONS

.1 Section [01 33 00 – Submittal Procedures]

.2 Section [01 74 21 – Construction/Demolition Waste Management and Disposal]

.3 Section [01 78 00 – Closeout Submittals]

.4 Section [03 30 00 – Cast-in-Place Concrete]

1.3 REFERENCES

.1 American National Standards Institute (ANSI).

.1 ANSI/NFPA-329-[99], Handling Underground Releases of Flammable and Combustible Liquids.

.2 ANSI/API 650-[2000], Welded Steel Tanks for Oil Storage.

.2 American Petroleum Institute (API).

.1 API RP 651-[1997], Cathodic Protection of Aboveground Petroleum Storage Tanks.

.2 API STD 653-[R01], Tank Inspection, Repair, Alteration, and Reconstruction.

.3 American Society for Testing and Materials International, (ASTM).

.1 ASTM C618-[01], Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.

.4 Canadian Council of Ministers of the Environment (CCME).

.1 CCME–PN1327–[2004], Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products.

.5 Department of Justice Canada (Jus).

.1 *Canadian Environmental Protection Act, 1999* (CEPA).

.6 Canadian Standards Association (CSA) / CSA International.

.1 CAN/CSA–B139–[E00], Installation Code for Oil-Burning Equipment.

.7 The Master Painters Institute (MPI).

.1 Architectural Painting Specification Manual - [September 2002].

.8 National Research Council Canada / Institute for Research in Construction.

.1 NRCC 38727, National Fire Code of Canada (NFCC) – [1995].

.9 Transport Canada (TC).

.1 *Transportation of Dangerous Goods Act, 1992* (TDGA).

.10 Underwriters' Laboratories of Canada (UL).

.1 ULC/ORD-C58.9-[97], Secondary Containment Liners for Underground and Aboveground Tanks.

.2 ULC/ORD-C58.12-[92], Leak Detection Devices (Volumetric Type) for Underground Storage Tanks.

.3 ULC/ORD-C58.14-[92], Leak Detection Devices (Nonvolumetric Type) for Underground Storage Tanks.

.4 ULC/ORD-C58.15-[92], Overfill Protection Devices for Underground Tanks.

.5 ULC/ORD-C107.4-[92], Ducted Flexible Underground Piping Systems for Flammable and Combustible Liquids.

.6 ULC/ORD-C107.7-[93], Glass-Fibre Reinforced Plastic Pipe and Fittings.

.7 ULC/ORD-C107.19-[92], Secondary Containment of Underground Piping.

.8 ULC/ORD-C142.23-[91], Aboveground Waste Oil Tanks.

.9 ULC-S601-[2000], Aboveground Horizontal Shop Fabricated Steel Tanks.

.10 CAN/ULC–S602–[92], Standard for Aboveground Steel Tanks for Fuel Oil and Lubricating Oil.

.11 CAN/ULC–S603.1–[92], Standard for Galvanic Corrosion Protection Systems for Steel Underground Tanks for Flammable and Combustible Liquids.

.12 ULC–S630–[93], Shop Fabricated Steel Aboveground Vertical Tanks for Flammable and Combustible Liquids.

.11 ULC–S652–[93], Tank Assemblies for Collection of Used Oil.Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations: http://laws-lois.justice.gc.ca/eng/regulations/SOR-2008-197/FullText.html.

1.4 SUBMITTAL PROCEDURES

.1 Submit the shop drawings, forms and other documents required under Section 01 33 00 – Submittal Procedures.

.1 Concrete: type, dosage and strength of mix proposed.

.2 Footings: dimensions and placement of footings installed on-site.

PARTIE 2 PRODUCTS

2.1 WASTE OIL STORAGE TANKS

.1 The waste oil tank supplied by DFO has a 500 gal. capacity, a double wall and bottom with an incorporated containment system, and the dimensions shown in the drawing and specifications.

.1 This tank shall be delivered on site by DFO according to the schedule proposed by the Contractor.

.2 The Contractor shall give the Departmental Representative four (4) weeks' notice of the date of the desired delivery to the site.

.3 This tank shall be installed by the Contractor on the slab intended for this purpose, built by the Contractor in the parking lot. The installation shall comply with the principles listed in section 3.1.

2.2 DAMAGED/REPAIRED TANKS

.1 Tanks shall be repaired in accordance with the requirements of API Standard 653.

2.3 PENETRATIONS INTO INTERIOR LINING

.1 Penetrations into the interior lining shall be done at the highest point or in the raised portion of the dyke floor.

.2 The penetrations shall then be sealed.

2.4 TANK BOTTOM WATER

.1 Tank bottom water shall be segregated from rainwater before being drained.

.2 Tank bottom water shall be drained in accordance with the applicable provincial or territorial legislation, regulations, guidelines and policies.

PARTIE 3 EXECUTION

3.1 INSTALLATION

.1 Install the tanks in accordance with the requirements set out in Standard CAN/CSA–B139, the National Fire Code of Canada and CCME Code PN1327, as well as the manufacturer's recommendations.

.2 Comply with the *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations* (STSPPAPPR).

.3 Place the tanks using lifting rings, hooks and, if necessary, spacer bars. When chains are used, they shall under no circumstances come in direct contact with the tank walls.

.4 Hire a certified installer to install the tank, as per RBQ license 1.8.

.5 Provide the Departmental Representative with RBQ license 1.8 certification.

.6 Installation of the aboveground waste oil tank shall comply with the *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations* (STSPPAPPR). Installation Guide Number 3 in the project reference documents provides the installation guidelines. However, the STSPPAPPR takes precedence over this guide. In addition, the appropriate sections of the attached form (use a second form for installation of a new tank) shall be filled out and submitted to the Departmental Representative. Upon receipt of these duly completed forms, the new tank will be registered with Environment Canada, and a label indicating the tank number shall be affixed to the tank, before waste oil is emptied into the tank.

3.2 ON-SITE QUALITY CONTROL

.1 Have a certified facility perform leak tests on the tanks in the presence of the Departmental Representative.

3.3 TOUCH-UPS

.1 If the protective coating on the tanks is damaged, do the necessary touch-ups with a product of the same type as originally used.

3.4 LEAK DETECTION SYSTEM

.1 Install the leak detection system as recommended by the manufacturer and in accordance with the DFO method (consult appended document DOC-RES-11).

.2 Perform the test according to the leak detection method after installation and before initial filling.

3.5 WASTE OIL TANK DISMANTLING

.1 Hire a certified contractor as per RBQ license 1.8.

.2 Dismantle the tank.

.1 Drain the tank.

.2 Purge the fumes from the tank.

.3 Recover the waste oil and store it.

.4 Recover the sludge in appropriate containers.

.5 Dispose of products according to existing environmental guidelines and provide proof of the disposal to the Departmental Representative.

.3 Decommissioning of the waste oil tank and its removal from the site shall comply with the requirements of the *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations*. The appropriate sections of form FOR–RES-12A, appended, shall also be completed. The contractor hired to remove the tank shall hold RBQ license 1.8. A soil quality characterization shall be carried out following removal of the tank to confirm that there is no long-term adverse effect. The duly completed form FOR-RES-12A shall then be submitted to the Departmental Representative within 15 business days of permanent decommissioning.

3.6 WASTE OIL TANK DESTRUCTION

.1 Hire a contractor certified as per RBQ license 1.8.

.2 Destroy the tank.

.1 Cut up the tank in accordance with applicable standards.

.2 Dispose of the tank pieces with a collector certified to receive petroleum demolition debris.

.3 Provide the Departmental Representative with the collector's contact information and disposal receipt.

.4 Fill out the appropriate sections of form FOR-RES-20, appended.

END OF SECTION

Pêches et Océans Canada | Fisheries and Oceans Canada

FORMULAIRE GÉNÉRAL DES SYSTÈMES DE STOCKAGE DE PRODUITS PÉTROLIERS RÉGLEMENTÉS APPARTENANT AU MPO	FOR-RES-12A

Formulaire d'identification des systèmes de stockage réglementés en vertu de la Loi canadienne sur la protection de l'environnement (1999).

Identification des systèmes de stockage appartenant au MPO assujettis au Règlement sur les systèmes de stockage de produits pétroliers et de produits apparentés (RSSPPPA).

INSTRUCTIONS

REMPLIR UN FORMULAIRE POUR CHAQUE SYSTÈME DE STOCKAGE. Un système peut comprendre un seul réservoir indépendant ou plusieurs réservoirs interconnectés. Les systèmes qui alimentent les appareils de chauffage et les génératrices sont exemptés du RSSPPA si la capacité totale est inférieure à 2 500 L.

Pour les nouveaux systèmes, il faut remplir les parties 1, 2, 3, 4 et 6 avant qu'un numéro d'identification puisse être attribué. Veuillez noter qu'un numéro d'enregistrement d'Environnement Canada est requis avant le premier remplissage. Un délai de cinq jours ouvrables est nécessaire pour obtenir un numéro d'enregistrement. En raison de la nature technique de certains des renseignements requis pour l'enregistrement, le propriétaire pourrait souhaiter que l'installateur remplisse une partie du formulaire. Le formulaire rempli doit être envoyé par voie électronique soit directement de l'adresse courriel du propriétaire du système de stockage, soit avec cette adresse ou celle d'un représentant délégué en c. c. La partie 6 du formulaire peut également être signée par la personne ressource du propriétaire du système ou son représentant délégué puis transmis par voie électronique.

En cas de changement de propriétaire ou d'exploitant, il faut communiquer par courriel les coordonnées de la nouvelle personne-ressource au Bureau régional de la coordination environnementale pour la mise à jour de la base de données d'Environnement Canada. Il est utile d'avoir la liste des sites concernés pour s'assurer que tous les enregistrements sont à jour.

REMARQUE : Les champs marqués d'un astérisque (*) sont facultatifs.

PARTIE 1 : OBJET DE L'AVIS (*sélectionner tout ce qui s'applique*)

- ☐ Il s'agit d'un système installé récemment. (Remplir les parties 2, 3, 4 et 6)
- ☐ Rectification de l'information déjà fournie à Environnement Canada (Remplir les parties 2, 3, 4, et 6) –
- ☐ Modification du système existant ou de son fonctionnement, à l'exclusion de la mise hors service ou du retrait du système, du réservoir ou de la tuyauterie (Remplir les parties 2, 3, 4 et 6).
- ☐ Le système ou certaines composantes (réservoirs ou tuyauterie) ont été retirés ou mis définitivement hors service (Remplir les parties 5 et 6).
- ☐ Le système a été transféré à un autre propriétaire (Remplir la partie 7).
- ☐ Autre (*préciser*):

FORMULAIRE GÉNÉRAL DES SYSTÈMES DE STOCKAGE DE PRODUITS PÉTROLIERS RÉGLEMENTÉS APPARTENANT AU MPO	FOR-RES-12A

PARTIE 2 : RENSEIGNEMENTS SUR LE PROPRIÉTAIRE ET L'EXPLOITANT DU SYSTÈME DE STOCKAGE

PROPRIÉTAIRE

Nom de l'organisation du propriétaire : Ministère des Pêches et Océans Canada

Adresse de l'organisation du propriétaire :

Adresse civile ou case postale : 200, rue Kent

Ville : Ottawa Province : Ontario Code postal : K1A 0E6

Direction (*cocher la case appropriée*) :

Garde côtière
- ☐ CA, Ouest
- ☐ CA, Centre et Arctique
- ☐ CA, Atlantique

Biens immobiliers
- ☐ DR, Pacifique
- ☐ DR, Centre et Arctique
- ☐ DR, Québec
- ☐ DR, Maritimes
- ☐ DR, Terre-Neuve-et-Labrador
- ☐ DR, Golfe

Ports pour petits bateaux
- ☐ DR, Pacifique
- ☐ DR, Centre et Arctique
- ☐ DR, Québec
- ☐ DR, Maritimes
- ☐ DR, Terre-Neuve-et-Labrador

☐ **Autre** *(préciser)* :

Le propriétaire est-il également exploitant? *Si oui, passer à la section **Nom de l'exploitant du réservoir sur le site**.* ☐ Oui ☐ Non

Le MPO est-il exploitant? *Si oui, passer à la section **Nom de la personne ressource de l'exploitant**.* ☐ Oui ☐ Non

EXPLOITANT

Nom de l'exploitant (p. ex., Administration portuaire, TPSGC) :

Adresse de l'exploitant :

Adresse civile ou case postale :

Ville : Province : Québec Code postal :

Nom de la personne ressource de l'exploitant[1] :

[1] Si le MPO est exploitant, la personne ressource de l'exploitant doit être soit le CA, le DR ou le directeur de secteur dont le personnel ou les programmes sont chargés de payer pour le carburant ou l'élimination des huiles usées.

***Titre de la personne ressource de l'exploitant** :

Adresse de la personne ressource de l'exploitant :

Adresse civile ou case postale :

Ville : Province : Québec Code postal :

Numéro de téléphone : ( ) - poste *Numéro de télécopieur : ( ) -

Adresse courriel de la personne ressource de l'exploitant :

PERSONNE RESSOURCE DE L'EXPLOITANT DU RESERVOIR SUR LE SITE

Nom de la personne ressource de l'exploitant du réservoir sur le site :

***Titre de la personne ressource de l'exploitant du réservoir sur le site** :

Adresse de la personne ressource de l'exploitant du réservoir sur le site :

Adresse civile ou case postale :

Ville : Province : Québec Code postal :

Numéro de téléphone : ( ) - poste *Numéro de télécopieur : ( ) -

Adresse courriel de la personne ressource de l'exploitant du réservoir sur le site :

FORMULAIRE GÉNÉRAL DES SYSTÈMES DE STOCKAGE DE PRODUITS PÉTROLIERS RÉGLEMENTÉS APPARTENANT AU MPO	FOR-RES-12A

PARTIE 3 : EMPLACEMENT DU SYSTÈME DE STOCKAGE ET DES DOSSIERS

Nom de l'installation :

Adresse de l'emplacement du système de stockage :
S'il n'y a pas d'adresse, indiquer la province et la latitude/longitude – nnn°nn.nn'(utiliser l'espace réservé pour la Ville)
Adresse civile ou case postale :
Ville : Province : Québec Code postal :
Numéro de ( ) - poste *Numéro de télécopieur : ( ) -

L'emplacement des dossiers est-il le même que l'emplacement du système? ☐ Oui ☐ Non
Si non, préciser l'adresse, indiquer la latitude/longitude – nnn°nn.nn')

L'emplacement du plan d'urgence est-il le même que l'emplacement du système? ☐ Oui ☐ Non
Si non, préciser l'adresse, indiquer la province et la latitude/longitude – nnn°nn.nn')

***Propriétaire du terrain** : ☐ MPO ☐ Fédéral ☐ Premières Nations ☐ Provincial/ Municipal ☐ Privé

PARTIE 4A : DESCRIPTION DU SYSTÈME DE STOCKAGE

Nom du site :

Emplacement :

Produit :

Utilisation (p. ex., carburant, génératrice, chauffage, huiles usées) :

***Autres renseignements pertinents pour différencier le réservoir** :

***N° d'identification du système de stockage du propriétaire** :

N° d'identification du système de stockage d'EC (*si connu*) : EC-

***Numéro de certification de l'installateur du système** (*si aucun installateur n'est certifié par la province, nom de l'ingénieur qui a supervisé l'installation*)

Le système est-il utilisé tout au long de l'année? ☐ Oui ☐ Non
Si non, indiquer les mois d'utilisation (p. ex., avril à novembre) :

Décrire de quelle façon l'aire de transfert[1] a été conçue pour confiner les déversements pour les systèmes > 2,500 l (p. ex. : zone courbée en béton, dispositif de confinement pour déversements de 40 litres avec trousse d'urgence et procédures opérationnelles normalisées.)

[1] L'aire de transfert signifie la zone autour du point de connexion entre le camion de livraison, le wagon, l'aéronef ou le navire et le système de stockage dont la capacité totale est de plus de 2 500 L.

Nombre de réservoirs dans le système :

PARTIE 4B : DESCRIPTION DES RÉSERVOIRS ET DES RACCORDEMENTS *(joindre des formulaires additionnels au besoin*)

	Réservoir 1	**Réservoir 2**	**Réservoir 3**	**Réservoir 4**	**Réservoir 5**
***N° d'identification du propriétaire** (*fortement recommandé pour les systèmes comportant plus de 2 réservoirs –le numéro de série peut être utilisé, si visible)*					
***Année de fabrication**					
***Fabricant**					

FORMULAIRE GÉNÉRAL DES SYSTÈMES DE STOCKAGE DE PRODUITS PÉTROLIERS RÉGLEMENTÉS APPARTENANT AU MPO

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Année d'installation						
Type de réservoir	Hors sol	☐	☐	☐	☐	☐
	Souterrain	☐	☐	☐	☐	☐
Type de raccordement (*excluant les tuyaux courts de remplissage verticaux ou d'aspiration*)	Hors sol	☐	☐	☐	☐	☐
	Souterrain	☐	☐	☐	☐	☐
	Les deux	☐	☐	☐	☐	☐
	Aucune tuyauterie	☐	☐	☐	☐	☐
Diamètre de la tuyauterie *Préciser l'unité de mesure* (*millimètres* ou *pouces*), *plus d'une valeur peut être saisie par réservoir.*						
Capacité des réservoirs (litres)						
Produits pétroliers	Diesel	☐	☐	☐	☐	☐
	Essence	☐	☐	☐	☐	☐
	Huile à chauffage	☐	☐	☐	☐	☐
	Carburéacteur	☐	☐	☐	☐	☐
	Huile usée	☐	☐	☐	☐	☐
	Essence pour avion	☐	☐	☐	☐	☐
Produits de pétrole apparentés	Biodiesel	☐	☐	☐	☐	☐
	Car**b**urant E85	☐	☐	☐	☐	☐
	Autre (*préciser*) :	☐	☐	☐	☐	☐
N° de norme ULC ou API		**Réservoir 1**	**Réservoir 2**	**Réservoir 3**	**Réservoir 4**	**Réservoir 5**
API Spécification 12B		☐	☐	☐	☐	☐
API Spécification 12D		☐	☐	☐	☐	☐
API Spécification 12F		☐	☐	☐	☐	☐
API Std 650		☐	☐	☐	☐	☐
ULC-C142.14		☐	☐	☐	☐	☐
ULC-C142.15		☐	☐	☐	☐	☐
ULC-C142.17		☐	☐	☐	☐	☐
ULC-C142.18 (éliminé et remplacé par S601)		☐	☐	☐	☐	☐
ULC-C142.20		☐	☐	☐	☐	☐
ORD-C142.21 (éliminé)		☐	☐	☐	☐	☐
ORD-C142.22 (éliminé – fait partie de S601)		☐	☐	☐	☐	☐
ORD-C142.23 (éliminé)		☐	☐	☐	☐	☐
ORD-C142.5		☐	☐	☐	☐	☐
ORD-C58.10 (éliminé et remplacé par S601)		☐	☐	☐	☐	☐
ULC-C80-1		☐	☐	☐	☐	☐
ULC-S601		☐	☐	☐	☐	☐
ULC-S601 et ULC-S603		☐	☐	☐	☐	☐
ULC-S602		☐	☐	☐	☐	☐

ULC-S603		☐	☐	☐	☐	☐
ULC-S615		☐	☐	☐	☐	☐
ULC-S630 (éliminé et remplacé par S601)		☐	☐	☐	☐	☐
ULC-S643 (éliminé et remplacé par S601)		☐	☐	☐	☐	☐
ULC-S652		☐	☐	☐	☐	☐
ULC-S653		☐	☐	☐	☐	☐
ULC-S655		☐	☐	☐	☐	☐
Réservoir en tissu démontable (« citerne »)		☐	☐	☐	☐	☐
Indéterminé- réservoir souterrain		☐	☐	☐	☐	☐
Indéterminé- réservoir vertical hors sol érigé sur place		☐	☐	☐	☐	☐
Indéterminé- réservoir vertical hors sol fabriqué en atelier		☐	☐	☐	☐	☐
Indéterminé- réservoir horizontal hors sol fabriqué en atelier		☐	☐	☐	☐	☐
Autre (préciser) :		☐	☐	☐	☐	☐
Matériel de construction		**Réservoir 1**	**Réservoir 2**	**Réservoir 3**	**Réservoir 4**	**Réservoir 5**
Matériau de construction du réservoir *Sélectionner tout ce qui s'applique.*	Acier revêtu de béton	☐	☐	☐	☐	☐
	Plastique renforcé de fibre de verre (PRV)	☐	☐	☐	☐	☐
	Acier double paroi (chemise en acier)	☐	☐	☐	☐	☐
	Acier	☐	☐	☐	☐	☐
	Acier inoxydable	☐	☐	☐	☐	☐
	Tissu polymérisé (pour la citerne)	☐	☐	☐	☐	☐
	Autre (*préciser*) :	☐	☐	☐	☐	☐
	Indéterminé	☐	☐	☐	☐	☐
Matériau de la tuyauterie et des raccordements *Sélectionner tout ce qui s'applique.*	Plastique renforcé de fibre de verre (PRV)	☐	☐	☐	☐	☐
	Acier double paroi (chemise en acier)	☐	☐	☐	☐	☐
	Acier	☐	☐	☐	☐	☐
	Acier inoxydable	☐	☐	☐	☐	☐
	Laiton	☐	☐	☐	☐	☐
	Fer noir	☐	☐	☐	☐	☐
	Cuivre	☐	☐	☐	☐	☐
	Acier galvanisé	☐	☐	☐	☐	☐
	Métallique flexible (p ex., acier inoxydable tressé	☐	☐	☐	☐	☐
	Flexible caréné	☐	☐	☐	☐	☐
	Enviroflex/ Bufflex	☐	☐	☐	☐	☐
	Geoflex	☐	☐	☐	☐	☐
	Thermo-plastique non métallique (flexible)	☐	☐	☐	☐	☐
	Polyéthylène	☐	☐	☐	☐	☐

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	PVC	☐	☐	☐	☐	☐
	Theroset (rigide)	☐	☐	☐	☐	☐
	Autre (*préciser*) :	☐	☐	☐	☐	☐
	Indéterminé	☐	☐	☐	☐	☐
Confinement secondaire		**Réservoir 1**	**Réservoir 2**	**Réservoir 3**	**Réservoir 4**	**Réservoir 5**
Réservoir *Sélectionner tout ce qui s'applique.*	Double paroi	☐	☐	☐	☐	☐
	Réservoir auto-confiné monobloc	☐	☐	☐	☐	☐
	Réservoir en acier revêtu de béton	☐	☐	☐	☐	☐
	Membrane synthétique	☐	☐	☐	☐	☐
	Membrane d'excavation	☐	☐	☐	☐	☐
	Digue dotée d'une membrane imperméable	☐	☐	☐	☐	☐
	Membrane imperméable avec double fond	☐	☐	☐	☐	☐
	Aucun	☐	☐	☐	☐	☐
	Autre (*préciser*) :	☐	☐	☐	☐	☐
	Inconnu	☐	☐	☐	☐	☐
Tuyauterie et raccordements *Sélectionner tout ce qui s'applique.*	Double paroi	☐	☐	☐	☐	☐
	Membrane d'excavation	☐	☐	☐	☐	☐
	Aucun	☐	☐	☐	☐	☐
	Autre (*préciser*) :	☐	☐	☐	☐	☐
	Inconnu	☐	☐	☐	☐	☐
Protection contre la corrosion		**Réservoir 1**	**Réservoir 2**	**Réservoir 3**	**Réservoir 4**	**Réservoir 5**
Réservoir *Sélectionner tout ce qui s'applique.*	Anode sacrificielle installée en atelier	☐	☐	☐	☐	☐
	Anode sacrificielle installée sur place	☐	☐	☐	☐	☐
	Protection cathodique par courant imposé	☐	☐	☐	☐	☐
	Matériel non-corrosif	☐	☐	☐	☐	☐
	Peinture	☐	☐	☐	☐	☐
	Indéterminé	☐	☐	☐	☐	☐
	Aucune	☐	☐	☐	☐	☐
Tuyauterie et raccordements *Sélectionner tout ce qui s'applique.*	Protection cathodique par courant imposé	☐	☐	☐	☐	☐
	Matériel non-corrosif	☐	☐	☐	☐	☐
	Peinture	☐	☐	☐	☐	☐
	Plastique contrecollé ou revêtement en résine	☐	☐	☐	☐	☐
	Revêtement de résine d'époxyde ou de polyuréthane	☐	☐	☐	☐	☐
	Indéterminée	☐	☐	☐	☐	☐
	Aucune	☐	☐	☐	☐	☐

FORMULAIRE GÉNÉRAL DES SYSTÈMES DE STOCKAGE DE PRODUITS PÉTROLIERS RÉGLEMENTÉS APPARTENANT AU MPO	FOR-RES-12A

Détection des fuites		**Réservoir 1**	**Réservoir 2**	**Réservoir 3**	**Réservoir 4**	**Réservoir 5**
Réservoir *Sélectionner tout ce qui s'applique.*	Essai d'étanchéité de précision des réservoirs	☐	☐	☐	☐	☐
	Jaugeage automatique	☐	☐	☐	☐	☐
	Essai d'étanchéité interne en continu des réservoirs	☐	☐	☐	☐	☐
	Inspection visuelle des parois	☐	☐	☐	☐	☐
	Rapprochement des stocks	☐	☐	☐	☐	☐
	Surveillance externe et en continue (système de câbles détecteurs)	☐	☐	☐	☐	☐
	Inspection du réservoir (API 653) ou du fond du réservoir	☐	☐	☐	☐	☐
	Surveillance de l'espace interstitiel – réservoirs à doubles parois	☐	☐	☐	☐	☐
	Autre (*préciser)* :	☐	☐	☐	☐	☐
	Aucune	☐	☐	☐	☐	☐
Tuyauterie et raccordements *Sélectionner tout ce qui s'applique.*	Jaugeage automatique des réservoirs	☐	☐	☐	☐	☐
	Essai d'étanchéité interne en continu	☐	☐	☐	☐	☐
	Inspection visuelle	☐	☐	☐	☐	☐
	Détection électronique des fuites	☐	☐	☐	☐	☐
	Essai d'étanchéité de précision des raccordements	☐	☐	☐	☐	☐
	Surveillance externe et en continu (système de câbles détecteurs)	☐	☐	☐	☐	☐
	Programme d'analyse de corrosion	☐	☐	☐	☐	☐
	Autre (*préciser)* :	☐	☐	☐	☐	☐
	Aucune	☐	☐	☐	☐	☐

Dispositif de confinement (contre déversements)	**Réservoir 1**	**Réservoir 2**	**Réservoir 3**	**Réservoir 4**	**Réservoir 5**
Nouveau réservoir ULC S663 hors sol	☐	☐	☐	☐	☐
Réservoirs hors sol (ORD-C142.19)	☐	☐	☐	☐	☐
Boîte de confinement de déversement au site de remplissage (réservoir hors sol)	☐	☐	☐	☐	☐
Réservoirs souterrains (ORD-C58.19)	☐	☐	☐	☐	☐
Boîte de confinement de déversement au site de remplissage (réservoir souterrain)	☐	☐	☐	☐	☐
Autre (*préciser*) :	☐	☐	☐	☐	☐
Aucun	☐	☐	☐	☐	☐

FORMULAIRE GÉNÉRAL DES SYSTÈMES DE STOCKAGE DE PRODUITS PÉTROLIERS RÉGLEMENTÉS APPARTENANT AU MPO	FOR-RES-12A

Protection contre les débordements	**Réservoir 1**	**Réservoir 2**	**Réservoir 3**	**Réservoir 4**	**Réservoir 5**
CAN/ ULC-S661 (remplace ORD-C58.15)	☐	☐	☐	☐	☐
Prévention des débordements pour les réservoirs de stockage (API RP 2350)	☐	☐	☐	☐	☐
Dispositifs anti-débordement pour les réservoirs de stockage de liquides inflammables (ORD-C58.15)	☐	☐	☐	☐	☐
Clapet activé par un flotteur en cas de débordement	☐	☐	☐	☐	☐
Système d'alerte en cas de débordement	☐	☐	☐	☐	☐
Arrêt automatique en cas de débordements	☐	☐	☐	☐	☐
Méthode – personnel qualifié assurant une surveillance constante (comprend la surveillance des jauges)	☐	☐	☐	☐	☐
Autre (*préciser*) :	☐	☐	☐	☐	☐
Aucune	☐	☐	☐	☐	☐
PARTIE 4C : ACCESSOIRES DU SYSTÈME DE STOCKAGE					
Type de pompe pour vider les merlons ou les puisards au séparateur huile-eau	**Réservoir 1**	**Réservoir 2**	**Réservoir 3**	**Réservoir 4**	**Réservoir 5**
Aucun séparateur huile-eau	☐	☐	☐	☐	☐
Aucune pompe	☐	☐	☐	☐	☐
Non centrifuge	☐	☐	☐	☐	☐
Centrifuge (*Note : Il est défendu d'utiliser une pompe centrifuge pour le transfert*)	☐	☐	☐	☐	☐
Détection de fuites pour puisards	**Réservoir 1**	**Réservoir 2**	**Réservoir 3**	**Réservoir 4**	**Réservoir 5**
Aucun puisard	☐	☐	☐	☐	☐
Inspection visuelle	☐	☐	☐	☐	☐
Surveillance en continu (capteur de produits pétroliers)	☐	☐	☐	☐	☐
Essai d'étanchéité sous pression statique d'un liquide	☐	☐	☐	☐	☐
Autre (*préciser*) :	☐	☐	☐	☐	☐
Aucune	☐	☐	☐	☐	☐
PARTIE 5 : MISE HORS SERVICE ET ENLÈVEMENT DU SYSTÈME DE STOCKAGE *Consulter les articles 42 à 45 du RSSPPPA.* ***Aviser Env.Can.*** *de la mise hors service permanente dans les* ***60 jours*** *suivant celle-ci.*					
***N° d'identification du système de stockage du propriétaire** :					
N° d'identification du système de stockage d'Env. Can. (*un N° d'identification par système*) : EC-					

		Réservoir 1	**Réservoir 2**	**Réservoir 3**	**Réservoir 4**	**Réservoir 5**
N° d'identification des réservoirs du propriétaire						
Composantes mises hors service de façon permanente	Réservoir	☐	☐	☐	☐	☐
	Tuyauterie	☐	☐	☐	☐	☐
Date de mise hors service permanente	Réservoir	- -	- -	- -	- -	- -
	Tuyauterie	- -	- -	- -	- -	- -

FORMULAIRE GÉNÉRAL DES SYSTÈMES DE STOCKAGE DE PRODUITS PÉTROLIERS RÉGLEMENTÉS APPARTENANT AU MPO	FOR-RES-12A

Composantes retirées du site	Réservoir	☐	☐	☐	☐	☐
	Tuyauterie	☐	☐	☐	☐	☐
Date de retrait du site et élimination	Réservoir	- -	- -	- -	- -	- -
	Tuyauterie	- -	- -	- -	- -	- -

Mise hors service effectuée conformément aux articles 42 à 44 du Règlement	**Oui**	**Non**
Mise hors service effectuée par une personne approuvée	☐	☐
Dossiers de mise hors service conservés	☐	☐
Liquides/boues retirés et éliminés	☐	☐
Vapeurs purgées	☐	☐
Aucun effet nocif à long terme	☐	☐
Étiquetage du tuyau de remplissage	☐	☐
Mise hors service effectuée conformément à l'article 45 du Règlement	**Oui**	**Non**
Mise hors service effectuée par une personne approuvée	☐	☐
Documents de la mise hors service conservés	☐	☐

Numéro de certification du technicien ayant retiré le système

*Renseignements supplémentaires :

Note : Tous les dossiers liés aux exigences réglementaires fédérales, comme les inspections visuelles et les rapports de mise hors service et de retrait, doivent être conservés pour une période de cinq ans après leur production.

PARTIE 6 : CERTIFICATION DU PROPRIÉTAIRE

Cette section doit être signée par le propriétaire du système de stockage ou par la personne ressource du propriétaire. Elle peut également être transmise par voie électronique, soit directement en provenance de l'adresse courriel du propriétaire du système ou celle d'un représentant délégué, ou avec ces adresses en c. c.

Par la présente, je, Nom et titre atteste que l'information fournie par rapport à l'identification des systèmes de stockage en vertu de la section 28 du Règlement sur les systèmes de stockage de produits pétroliers et de produits apparentés est exacte et complète.

Signature : _____ Date : - -

PARTIE 7 : TRANSFERT DE PROPRIÉTÉ DE SYSTÈMES DE STOCKAGE DU MPO À UNE AUTRE ORGANISATION

Le nouveau propriétaire doit adresser un courriel confirmant la propriété des systèmes de stockage au Bureau régional de la coordination environnementale du MPO. Ce courriel sera transmis à Environnement Canada, avec une copie au Bureau national de la coordination environnementale et à l'ancien représentant du MPO en qualité de propriétaire, afin que l'enregistrement soit retiré des inventaires du MPO et d'Environnement Canada.

Note : Tous les documents produits par le MPO en vertu des exigences réglementaires fédérales, tels que les rapports d'inspections visuelles, de mise hors service ou de retrait, doivent être conservés pendant cinq ans après leur production.

Nom du site :

***N° d'identification du système de stockage du MPO** :

N° d'identification du système de stockage d'EC:

Date du transfert : - -

Nom de l'organisation du nouveau propriétaire :

Nom du représentant du propriétaire :

FORMULAIRE GÉNÉRAL DES SYSTÈMES DE STOCKAGE DE PRODUITS PÉTROLIERS RÉGLEMENTÉS APPARTENANT AU MPO	FOR-RES-12A

Adresse du représentant du propriétaire :
Adresse civile ou case postale :
Ville : Province : Québec Code postal :
Numéro de téléphone : ( ) - poste *Numéro de télécopieur : ( ) -

Adresse courriel du représentant du propriétaire :

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01 11 11 – Summary of Work

.2 Section 01 35 43 – Environmental Protection

.3 Section 35 20 23 – Dredging

1.2 REFERENCES

.1 MINISTÈRE DU DÉVELOPPEMENT DURABLE, DE L'ENVIRONNEMENT, ET DE LA LUTTE CONTRE LES CHANGEMENTS CLIMATIQUES (MDDELCC). 2016. *Politique de protection des sols et de réhabilitation des terrains contaminés.* En ligne. [http://www.mddelcc.gouv.qc.ca/sol/terrains/politique/].

.2 MINISTÈRE DU DÉVELOPPEMENT DURABLE, DE L'ENVIRONNEMENT, ET DE LA LUTTE CONTRE LES CHANGEMENTS CLIMATIQUES (MDDELCC). 2016. *Règlement sur le stockage et les centres de transfert de sols contaminés*, Direction du suivi de l'état de l'environnement.

.3 MINISTÈRE DU DÉVELOPPEMENT DURABLE, DE L'ENVIRONNEMENT, ET DE LA LUTTE CONTRE LES CHANGEMENTS CLIMATIQUES (MDDELCC). 2016. *Règlement sur l'enfouissement des sols contaminés*, Direction du suivi de l'état de l'environnement.

.4 MINISTÈRE DU DÉVELOPPEMENT DURABLE, DE L'ENVIRONNEMENT, ET DE LA LUTTE CONTRE LES CHANGEMENTS CLIMATIQUES (MDDELCC). 2013. *Critères de qualité de l'eau de surface*, 3e édition. Direction du suivi de l'état de l'environnement.

.5 Havre de Kégaska, Caractérisation des sédiments 2015, Services Aqua-Habitat, F. Hartog.

.6 Kégaska, enfoncements dans les sédiments meubles, 2015, F.Hartog.

1.3 SEDIMENT MANAGEMENT

.1 This section covers the soils to dredge in the water basin and near the Fishermen's wharf.

.2 The sediments that will not be used for the construction of the breakwater will be managed on land. In this context, the dredged sediment should be considered as soil and its management must comply with the *Politique de protection des sols et de réhabilitation des terrains contaminés*. The unused dredged materials will be removed and stored on land.

.3 The marine sediments managed on land must be drained prior to disposal off site. The method of drying (dehydration) by temporary filter tank should be preferred. It involves the use of a temporary basin mounted on metal structures, adjustable to the desired volume, and provided with a geo-membrane which acts as a filter to drain sediment. Sediments settle in the basin formed while the supernatant is discarded. If space permits, a temporary pond can be created with an earth embankment and covered with a membrane. A watertight basin is also arranged to collect the filtered water. The filtrate is sampled and analyzed by the Contractor in the early drying operations. The leachate from the dehydration of the sediments is assumed to be uncontaminated. If necessary, a treatment system should be set up. This will

PART 1 – GENERAL

1.1 RELATED SECTIONS

.1 Section 01 11 10 – Work Summary

.2 Section 01 14 00 – Work Restrictions

.3 Section 01 33 00 – Submittal Procedures

.4 Section 01 32 16.07 – Work Schedule – Bar Graph (Gantt Chart)

.5 Section 01 35 29.06 – Health and Safety

.6 Section 01 35 43 – Environmental Protection

.7 Section 31 23 16.26 – Rock Excavation

.8 Section 35 20 23A – Sediment Management

1.2 REFERENCES

.1 The following references are included in the appendices to the specifications, and as such, they constitute an integral part of the specifications.

.1 Havre de Kégaska, Caractérisation des sédiments 2015, Services Aqua-Habitat, F. Hartog (French only).

.2 Kégaska, enfoncements dans les sédiments meubles, 2015, F. Hartog (French only).

.3 Étude géotechnique et caractérisation environnementale des sédiments, Quai commercial de Kégaska, Qualitas-B-Sol, November 2006 on behalf of PWGSC (French only).

1.3 DESCRIPTION OF DREDGING WORK

.2 Sea floor dredging work is required to prepare the new harbour basin, to build the anchor key of the breakwater onsite, and to prepare the new harbour foundation.

.1 A portion of the dredged material characterized as containing concentrations of PAH contaminants in the B-C range, as described in MDDELCC's *Politique de protection des sols et de réhabilitation des terrains contaminés*, must be piled separately and disposed of off-site in an acceptable manner (see Section 01 35 43 – Environmental Protection, 35 20 23A – Sediment Management and the Environmental characterization). These sediments are located near the fishers' wharf at points CSED-8 and CSED-9, under a layer of shells, according to the investigations conducted.

.2 A certain amount of the dredged material in the future harbour will be composed of natural stone, gravel and sand found onsite—uncontaminated and of varying sizes. These materials must be removed from the sea floor and deposited on the breakwater as pit run if they are granular and not mixed with fine sediment.

.3 A certain amount of the dredged material in the harbour will be composed of fine or silty sediment that is uncontaminated, which must be disposed of on land, in keeping with current environmental rules.

.4 A certain amount of the dredged material will be made up of shells (near the fishers' wharf in particular). This material must be disposed of as uncontaminated material.

.5 All stones and rock excavated from the future harbour must be re-used as pit run in the future breakwater, provided that they are granular. By contrast, no silt, clay, silty material, shells or contaminated sediment will be allowed in the breakwater and shall be disposed of off-site, according to contamination level, in keeping with regulations.

.6 On-land disposal of sediment that will not be re-used in the breakwater must comply with existing regulations.

.7 Dredging work is planned:

.1 To a grade of -3.2 metres at the new harbour entrance and in the central portion of the basin. Rock and sediment may be encountered.

.2 To a grade of -2.5 metres in the north area of the new harbour. Rock and sediment may be encountered.

.3 To a grade of -2.5 metres in the overburden—or just until solid rock is reached, if it is reached before 2.5 metres—to the south of the new harbour. Rock and sediment may be encountered.

.4 Rock excavation is required to lay the footings for the low retaining wall from the roadway, in the solid rock. Rock and sediment may be encountered.

.5 Rock excavation is required to install the anchorage points for the pontoons. Rock and sediment may be encountered.

.8 The dredged material shall be disposed of in an authorized location, based on the nature of the dredged material and its level of contamination. The Contractor must provide the Departmental Representative with attestations from the disposal site, obtained at least three (3) days prior to the work.

.9 Class A materials are treated like solid rock requiring hydraulic drilling to loosen (section 31 23 16.26).

.10 The site of the dredging work is indicated in the dredging plan.

.11 The description of the material to be dredged is included in the appendices to these specifications (see Characterization). The Contractor is responsible for reviewing and confirming the data available for the site and for integrating this data into the work plan.

.12 The Contractor must be aware of the nature of the materials to be dredged, the environment and the infrastructure present within the project area, to its satisfaction, prior to submitting its bid. The nature of the materials to be dredged, the environment and the infrastructure present within the project area may vary from those reported in the appendices to these specifications. If applicable, these

differences shall not be considered as a valid basis for complaint.

.13 Based on the environmental characterization and the surveys conducted, it is expected that basement rock will be encountered at certain points within the dredging area. Any discrepancy between the actual depths of the basement rock and those described in the said appendices shall not be considered as a valid basis for complaint.

.3 Sequence of work tasks

.1 The sequence of dredging tasks must be consistent with the Contractor's plans for the project as a whole.

1.4 COST AND METHOD OF PAYMENT

.1 Measurement for payment purposes

.1 Only sediment excavated from above the required grade and within the indicated or specified side slopes will be measured.

.2 Dredging: dredging work will be paid by cubic metre place measurement (CMPM), according to the surveys conducted before and after dredging by the Departmental Representative, excluding overdredging.

.3 Disposal: payment will only be made for those materials that cannot be re-used as pit run in the breakwater.

.2 The Departmental Representative's survey team will conduct surveys before and after dredging and will confirm whether or not the Contractor has reached the grades agreed upon in the contract (grades).

1.5 PROJECT CONSTRAINTS AND TIMELINE

.1 General

.1 The project must take into consideration the following constraints:

.1 environmental constraints (see Section 01 35 43 – Environmental Protection).

.2 geotechnical conditions.

.3 the environmental characterization.

.4 maintaining navigation activities at the wharf, specifically for the ferry.

.5 sediment management, in keeping with Section 35 20 23A – Sediment management.

.2 Sequence of work

.1 Dredging work shall progress in a sequence that is in line with the work schedule.

.3 Obtaining licences

.1 The Contractor is responsible for obtaining the required licenses and certification for the project.

1.6 DEFINITIONS

.1 Dredging: excavating, transporting and disposing of underwater materials.

.2 Disposal: transport and ultimate disposal of dredged sediment in an authorized on-land disposal site.

.3 Class A material: rock masses broken up by hydraulic drilling, and rocks and rock fragments at least 1.5 m^3 in volume.

.4 Class B material: loose or shale rock, silt, sand, quicksand, mud, shingle, gravel, clay, sand, gumbo, boulders, hardpan and debris of individual volumes less than 1.5 m^3.

.5 Debris: pieces of wood, wire rope, scrap steel, pieces of concrete and other waste materials.

.6 Grade: plane above which all material is to be dredged.

.7 Side slope: surface or plane sloped relative to the dredging level, located at the side boundary of the dredged area and extending to the intersection with the natural level of the bottom outside that side boundary; the slope is expressed as the ratio between the horizontal and vertical dimensions.

.8 DGPS-RTK Technology: technology that provides a GPS position accurate to the nearest centimetre in x, y, z dimensions.

.9 Coordinate system:

.1 MTM project: modified transverse Mercator projection.

.2 MTM coordinates: plane rectangular coordinates used for graphic representation where a grid is applied to the MTM projection. The coordinates are the horizontal reference parameters.

.10 “Instantaneous depth” mode: operating mode of bathymetric survey equipment whereby the system stores in memory every depth reading over the entire pass.

.11 Dredging polygon: geo-referenced area demarcating the sediment from within ranges A-B and < A that is to be dredged as part of this project.

.12 Sounding before dredging: Hydrographic survey conducted by the Departmental Representative before the start of dredging work, in order to determine the baseline conditions of the sea floor from which the dredging thickness must be removed.

.13 Verification sounding: Hydrographic survey conducted by the Departmental Representative once the Contractor confirms having completed the dredging work for a given area, based on a group of dredging polygons. This grouping will be agreed upon between the Contractor and the Departmental Representative. If this survey confirms that the Contractor has carried out the work in accordance with the contractual requirements, then it shall be considered as the final acceptance sounding.

.14 Final acceptance sounding: Hydrographic survey conducted by the Departmental Representative once work is completed in a given area, confirming that the work has been completed in accordance with contractual requirements.

.15 Overdredging: Dredging beyond the boundaries of the dredging polygon and/or to a greater depth than the agreed-upon dredging depth.

.16 Verified area: dredging area deemed to comply with the plans and specifications.

.17 Site Completion Certificate: letter or memorandum from the Departmental Representative certifying that dredging at a particular site has been completed.

1.7 REGULATORY REQUIREMENTS

.1 The Contractor shall, and shall ensure that all its employees, both actual and de facto, including its subcontractors, honour all third-party rights and privileges and comply with all federal, provincial and municipal laws, regulations and orders.

.2 Mark out floating equipment with beacons, using signal lights that conform to current standards.

1.8 WORK SCHEDULE

.1 In the ten (10) days after the contract has been awarded, the Contractor shall submit for approval by the Departmental Representative the work schedule, including the amount of time required to complete each work step, up to and including completion of the work.

.2 In addition to the required schedule, the Contractor shall, two (2) weeks in advance, notify the Departmental Representative of its expected date of arrival at the site.

.3 The Contractor shall abide by the established schedule and take immediate action to correct any deviation by modifying the dredging work underway or transporting and moving other equipment. The Departmental Representative shall be informed of any corrective measures taken.

.4 The work shall be completed within the timeframe mentioned in the contract documents.

.5 The Contractor shall provide a plan indicating the sequence and steps of dredging activities.

1.9 LOCATION

.1 The location of materials to be dredged is indicated in the plans.

1.10 INTERFERENCE TO NAVIGATION

.1 Obtain all necessary information regarding vessel traffic within the area affected by the dredging work.

.2 Plan and carry out the work so as not to prevent land or water access to the commercial wharf.

.3 At least 48 hours in advance if possible, the Contractor shall advise the Departmental Representative of any special relocation of dredging equipment (for refuelling, repair, etc.).

.4 In the event that the Contractor's equipment obstructs navigation, the Contractor shall

immediately remove this equipment. Should the Contractor fail to comply with the above requirement, removal will be undertaken by the Department and all costs related thereto shall be charged to the Contractor.

1.11 GRADES

.1 The dredging grades indicated in these specifications and in the contract drawings are given in metres, and referenced to chart datum (CD).

1.12 FLOATING EQUIPMENT

.1 The Contractor shall supply and maintain all dredging equipment with sufficient capacity to excavate, load, transfer, transport, and dispose of all materials mentioned in the specifications, taking into account settling of materials and excess dredged materials as applicable.

.2 Dredges and all other floating plants must be registered and manufactured in Canada. Any bidder wishing to use dredges or equipment manufactured outside of Canada must obtain a Certificate of Qualification from Industry Canada prior to submitting its bid.

.3 Provide the registration certificate for each piece of floating equipment or craft.

.4 Provide the technical documents for dredging equipment and their components.

.5 All equipment used to execute the dredging contract shall be at all times satisfactory to the Departmental Representative.

1.13 SITE INSPECTION

.1 Before submitting its bid, the bidding Contractor shall visit the work site and obtain all necessary information regarding the nature and scope of the work and regarding any conditions that could influence the execution of said work.

.2 By submitting its bid, the Contractor acknowledges that it is aware of the following: the nature and location of the project, general and local conditions, particularly weather or climatic conditions, the degree of agitation of the water surface, the tide levels and physical conditions associated with the location of the project, the nature of the underwater soil and sea floor, the nature of the materials to be dredged, and all other circumstances that could affect the conditions of execution of the contract and the value of the work.

1.14 SITE INFORMATION

.1 Take all necessary measures to become fully familiar with potential inclement weather and sea conditions in this area.

.2 Several tests on the particle size of the materials to be dredged are shown in F. Hartog's characterization report, Havre de Kégaska, Caractérisation des sédiments 2015, attached as a reference document to the tender documents.

.3 The Contractor shall conduct research on historical weather and wave conditions and

assess the related difficulties that may be encountered.

1.15 BATHYMETRIC SURVEYS

.1 The Departmental Representative's survey team will conduct surveys before and after dredging and will confirm whether or not the Contractor has reached the depths agreed upon in the contract (grades).

.2 The Departmental Representative shall provide the Contractor with the basic data (in digital format) required for the work (pre-dredging bathymetric surveys); these digital files will be sent to the Contractor by e-mail.

.3 The Contractor shall conduct its own bathymetric verification surveys to ensure that the sea floor has been dredged to the specified depth before stating that it has completed the dredging work. The Departmental Representative's surveys will then take place.

.4 If, after the verification surveys or subsequent surveys have been done, there are still materials in the areas to be dredged, the Contractor shall return to the site in order to complete the work to the satisfaction of the Departmental Representative.

1.16 WORK PLAN

.1 Submit to the Departmental Representative for approval a detailed dredging work plan, which includes the following information:

.1 The list of technical specifications for all dredging equipment (crafts, excavator, crane, bucket, barge, surveillance equipment, generators, pumps, etc.).

.2 The method by which the equipment will be transported to the site, including the roadways to be used, the overall width of equipment to be transported by roadways, any modifications required for roadways.

.3 The launch point and launching method for all craft (if applicable).

.4 The sequence of work tasks to be carried out by the Contractor, including a plan that illustrates the proposed dredging process, by polygon and by level of contamination.

.5 The description of the water processing, decantation, storage, and pumping system.

.6 The disposal site and the method for transporting materials dredged from the aquatic environment to land.

.7 The plan for transporting dredged materials over water prior to their transfer to temporary storage, drying and/or processing sites, and to the disposal site.

.2 The transportation plan included in the dredging work plan must include the following components and information (at a minimum):

.1 The type and number (average and maximum) of vehicles used in the work area (if applicable), along with the transportation frequency for dredged materials (number of departures from the dredging site per unit of time) and/or the flow rate of dredged materials (m^3 of dredged materials per unit of time) along with the dimensions of the pipes.

.2 The overland routes used by vehicles transporting dredged materials to their temporary storage site (for storage, drying or processing) and/or the pipeline route and planned safety measures.

.3 Measures to reduce erosion of temporary road platforms by vehicle traffic, particularly on rainy days.

.4 Measures to reduce vehicular transport on public roadways.

1.17 SYSTEM OF UNITS

.1 Values related to bathymetric surveys, water levels, distances, areas and volumes, vertical benchmarks mentioned in this specification and during the execution of work will be in the International System of Units (SI).

PART 2 PRODUCTS

2.1 DREDGING EQUIPMENT

.1 The work shall be carried out using dredges that are adapted to the site conditions, and to the nature and volume of sediment to be dredged.

.2 The dredges must allow the dredging areas to be adequately dredged.

.3 By their dimensions, features and draft, the dredges shall be appropriate to complete the work.

.4 The dredges shall allow for transportation and transfer of the dredged materials.

PART 3 EXECUTION

3.1 GENERAL

.1 Before commencing work, the Contractor must obtain written approval of the work schedule from the Departmental Representative.

.2 Dredge the materials located within the areas specified in the drawings.

.3 During the project, complete all dredging work as shown in the plans and as described in the specifications.

.4 The Contractor shall take note of the proposed final post-dredging grades, and shall dredge as little material as possible beyond these. Any overdredging and additional fill required to compensate for over-excavation shall be the sole responsibility of the Contractor, to carry out at its own expense.

.5 The sediment shall be removed using a hydraulic shovel, a crane equipped with a clamshell bucket or a hydraulic suction dredge. The methods used for dredging and for transfer and disposal of sediment shall be specified by the Contractor carrying out the work.

.6 The Contractor is advised to dredge using a computerized system capable of accurately displaying on a monitor the position of the dredge and relevant bathymetric data

(locations and thickness of material to be dredged) as well as the dredging template.

.7 The coordinates of control points to determine the horizontal limits of the sectors to be dredged will be provided by the Departmental Representative.

.8 The Contractor is responsible for tracking the spatial positioning of its own dredge.

.9 The Departmental Representative may, at his or her discretion, check the accuracy of any positioning systems used by the Contractor.

.10 The Contractor shall be solely responsible for all primary, intermediate or secondary points (x, y), (x, y, z) and (lat, long) used by it, whether determined by it or provided by the Departmental Representative or any other party.

.11 While the contract is being executed, all equipment must be kept in good working order and adequately repaired as needed. All equipment used must be seaworthy and in good condition.

.12 Demobilization: The Contractor may demobilize its dredging equipment only after receiving authorization to do so from the Departmental Representative.

.13 Buoys necessary for the contract: The Contractor shall supply, place in position, and maintain at its own expense all buoys/markers required to properly execute the work. In the event that any of these buoys/markers sink or go adrift by chance or by accident, they shall be re-floated and/or recovered by the Contractor at its own expense to the satisfaction of the Departmental Representative. The Contractor shall assume responsibility for all accidents of any kind whatsoever due to the buoys/markers being improperly placed or insufficiently visible during the day or improperly lighted during the night or for any other reason.

.14 Navigation buoys: The Contractor shall not at any time remove or relocate any main navigation buoys. Relocation of said buoys, where warranted, will be done by the Department of Fisheries and Oceans; requests for such service must be made to the Departmental Representative at least five (5) business days in advance. The Departmental Representative reserves the right to determine whether such requests by the Contractor are warranted.

.15 Maintain in working order all necessary signals and lights installed on work equipment, in keeping with current standards. All equipment required for the work shall be properly identified and/or visible at all times.

.16 The Contractor shall complete daily activity reports. The forms will be provided by the Departmental Representative before the start of work.

.17 Carry out the work in such a way as to avoid any damage to vessels and to minimize interference with operations at the wharf and the ferry access ramp.

.18 Provide and assume the cost of anchors for the dredging equipment.

.19 While the work is being carried out, if, in the opinion of the Departmental Representative, the equipment provided is not suitable and sufficient to perform properly or the Contractor has delayed the work schedule, the Contractor shall, within fifteen (15) days following receipt of written notice from the Departmental Representative, provide other

equipment subject to advance approval from the Departmental Representative.

.20 Take all necessary precautions to protect existing structures located in the vicinity of the work. Any damage to such structures shall be repaired at the Contractor's expense.

3.2 DREDGING METHOD

.1 Use a dredging method that reduces the presence of water in the soil and sediment as much as possible.

.2 Avoid moving the bucket abruptly, and levelling the sea floor by pivoting the bucket or the dredge and limit the speed at which the dredge is lowered and raised if the amount of suspended solids is too high.

.3 In the event of a sudden increase in suspended solids, adapt the work methods accordingly (e.g. slow down the work or space out work shifts).

.4 Dredge on calm days to minimize suspension of fine sediment particles in the water column, and to ensure sediment control measures are effective.

.5 Ensure that no equipment, materials, or debris from the work gets left in the navigable portion of the watercourse or obstructs navigation.

.6 Whenever possible, work in intertidal zones shall be carried out at low tide or within two hours of low tide.

3.3 DISPOSAL OF DREDGED MATERIAL

.1 The Contractor shall provide the Departmental Representative with its final management plan for dredged materials, at least three (3) weeks prior to the start of work. All materials dredged (with the exception of certain debris, if applicable) during the course of this work shall be managed in compliance with the management plan submitted to the Departmental Representative.

.2 Transport the dredged materials to the appropriate locations and dispose of them in keeping with the environmental regulations and policies in force.

.3 The Contractor shall ensure the trucks used are in good working order. Any trucks or other methods of transport operating at a noise level deemed above the normal limits by the Departmental Representative must stop transporting materials or be repaired or modified to make them acceptable.

.4 The truck beds must be sealed in such a way as to prevent water discharge on roadways, and a tarp shall be spread over top of the truck beds transporting the dredged material.

.5 The Contractor shall cooperate with the Departmental Representative and the municipality to minimize the impact of transport on the daily lives of residents in the vicinity of the truck route and work site.

.6 Roadways between the dockside transfer site and the disposal site shall be kept clean and free of dirt that may result from transportation of dredged sediment.

.7 Put adequate signage in place for the duration of the work.

.8 The Contractor shall be entirely responsible for any damage it causes to structures during unloading operations.

.9 Materials shall not be unloaded in the prohibited areas indicated in the plans.

3.4 HYDROGRAPHIC SURVEYS AND ACCEPTANCE OF DREDGING WORK

.1 Hydrographic surveys (soundings) shall be conducted by the Departmental Representative before the dredging work begins, in order to determine the baseline conditions in the areas to be dredged.

.2 The pre-dredging survey shall be done not more than three (3) weeks prior to the start of dredging work.

.3 During the hydrographic surveys, a qualified representative of the Contractor shall be present on board the survey launch with the Departmental Representative, so that the soundings are officially accepted by both parties.

.4 The Departmental Representative shall provide to the Contractor, in ASCII digital format (see Appendix 14), the hydrographic data (depths) required for the work. These digital files shall be sent to the Contractor in electronic format.

.5 The Contractor shall submit an official request five (5) days in advance so that post-dredging soundings can be done when the work is finished.

.6 In all cases, the hydrographic surveys will be carried out in daylight. The Contractor must be aware that the Departmental Representative's craft will not conduct any surveys between sunset and sunrise.

.7 The execution of hydrographic surveys depends on weather conditions.

.8 The Departmental Representative will not conduct any hydrographic surveys if there is ice present. There will be no additional payment for delays caused by such conditions or situations.

.9 Hydrographic survey equipment:

- .1 Positioning system:
  - .1 Real-Time Kinematic (RTK) GPS system.
  - .2 Equipment: Trimble 5700 or equivalent.
- .2 Sounding system:
  - .1 Multibeam or Multi-transducer system.
  - .2 Vertical accuracy: ±0.1 metres.
  - .3 Frequency: 200 or 400 kHz.

.10 Processing bathymetric data:

- .1 Bathymetric data will be processed in order to create a 3D surface using the Combined Uncertainty and Bathymetry Estimator (CUBE) algorithm.
- .2 The Departmental Representative will use the parameters that he or she deems

adequate for processing using the CUBE algorithm.

.3 The 3D surface shall be created using a grid with a resolution of 50 cm x 50 cm.

.4 This grid will allow for the creation of a digital file containing the depths resulting from this processing.

.11 Acceptance of the dredging work:

.1 When the work is complete, the Departmental Representative will, if necessary, conduct two (2) hydrographic surveys, i.e. a verification survey and a final post-dredging survey. Any additional surveys and standby time will be billed to the Contractor on an hourly basis as follows:

.1 Hourly rate of $300.00/hour.

.2 Time deemed standby time shall be any period exceeding twenty-four (24) hours between the end of the verification survey and the start of the final post-dredging survey.

.3 Standby time shall be counted by the Departmental Representative onsite at the rate of eight (8) hours a day, that is, from 8:00 a.m. to 4:00 p.m. If surveys are required by the Contractor outside of this time period, they shall also be invoiced to the Contractor as standby time.

.2 If, after the verification survey or subsequent surveys, the results indicate that the entire thickness prescribed in these specifications has not been dredged, the Contractor shall be expected to return to the site to complete the work to the Departmental Representative's satisfaction.

3.5 RE-DREDGING

.1 Re-dredge, subject to the Departmental Representative’s approval, any area that does not meet contract criteria.

3.6 CO-OPERATION AND ASSISTANCE TO DEPARTMENTAL REPRESENTATIVE

.1 Co-operate with the Departmental Representative during the work inspection and provide any assistance requested.

.2 The Contractor shall supply all necessary and satisfactory marine transportation to the Departmental Representative from a local wharf to the dredge for site inspections or for any other reason.

.3 The Contractor shall expect to supply wharf facilities and obtain at its own expense the required safe places (on land and water, as applicable) for its floating plant during the work period.

.4 The Contractor shall make available its dredging equipment for characterization of the dredged areas.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01 11 11 – Summary of Work

.2 Section 01 35 43 – Environmental Protection

.3 Section 35 20 23 – Dredging

1.2 REFERENCES

.1 MINISTÈRE DU DÉVELOPPEMENT DURABLE, DE L'ENVIRONNEMENT, ET DE LA LUTTE CONTRE LES CHANGEMENTS CLIMATIQUES (MDDELCC). 2016. *Politique de protection des sols et de réhabilitation des terrains contaminés.* En ligne. [http://www.mddelcc.gouv.qc.ca/sol/terrains/politique/].

.2 MINISTÈRE DU DÉVELOPPEMENT DURABLE, DE L'ENVIRONNEMENT, ET DE LA LUTTE CONTRE LES CHANGEMENTS CLIMATIQUES (MDDELCC). 2016. *Règlement sur le stockage et les centres de transfert de sols contaminés*, Direction du suivi de l'état de l'environnement.

.3 MINISTÈRE DU DÉVELOPPEMENT DURABLE, DE L'ENVIRONNEMENT, ET DE LA LUTTE CONTRE LES CHANGEMENTS CLIMATIQUES (MDDELCC). 2016. *Règlement sur l'enfouissement des sols contaminés*, Direction du suivi de l'état de l'environnement.

.4 MINISTÈRE DU DÉVELOPPEMENT DURABLE, DE L'ENVIRONNEMENT, ET DE LA LUTTE CONTRE LES CHANGEMENTS CLIMATIQUES (MDDELCC). 2013. *Critères de qualité de l'eau de surface*, 3e édition. Direction du suivi de l'état de l'environnement.

.5 Havre de Kégaska, Caractérisation des sédiments 2015, Services Aqua-Habitat, F. Hartog.

.6 Kégaska, enfoncements dans les sédiments meubles, 2015, F.Hartog.

1.3 SEDIMENT MANAGEMENT

.1 This section covers the soils to dredge in the water basin and near the Fishermen's wharf.

.2 The sediments that will not be used for the construction of the breakwater will be managed on land. In this context, the dredged sediment should be considered as soil and its management must comply with the *Politique de protection des sols et de réhabilitation des terrains contaminés*. The unused dredged materials will be removed and stored on land.

.3 The marine sediments managed on land must be drained prior to disposal off site. The method of drying (dehydration) by temporary filter tank should be preferred. It involves the use of a temporary basin mounted on metal structures, adjustable to the desired volume, and provided with a geo-membrane which acts as a filter to drain sediment. Sediments settle in the basin formed while the supernatant is discarded. If space permits, a temporary pond can be created with an earth embankment and covered with a membrane. A watertight basin is also arranged to collect the filtered water. The filtrate is sampled and analyzed by the Contractor in the early drying operations. The leachate from the dehydration of the sediments is assumed to be uncontaminated. If necessary, a treatment system should be set up. This will

need to be confirmed first. The water discharged during the drying must meet the applicable criteria indicated in les *critères de qualité d'eau de surface* du MDDELCC (MDDELCC, 2013).

.4 The materials will be sent to a disposal site according to their level of contamination.

.5 Some dredged sediments adjacent to the wharf have PAH (polyclinic aromatic hydrocarbon) concentrations in the B-C range of the criteria of *Politique de protection des sols et de réhabilitation des terrains contaminés*. The excavated soil and dredged sediment within the BC range of the policy should be segregated and managed according to the Grid of contaminated soil excavated Management Policy *(Grille intérimaire de gestion des sols contaminés excavés de la Politique).* The environmental quality of soils and sediments in this range meets the criteria for a commercial site. Priority will be to reuse these soils as backfill under the future access road as long as reuse does not increase the level of contamination of the receiving environment. The disposal of the surplus must respect the policy and municipal regulations. Ultimately, this material will be directed, after approval of Departmental Representative, to an engineered landfill (LET).

.6 Soils categorized inferior to the A criteria may be reused without restriction.

.7 In the event that during the excavation work, visual or olfactory cues do not match the anticipated level of contamination, temporarily store these soils on the site at a designated location, perform the required analysis and dispose of these soils according to their level of contamination.

.8 At the end of the excavation work on land, document the environmental quality of the soil and walls of the excavation funds taking into account the methodology of the various MDDELCC characterization guides. If the soils of the excavation walls are contaminated at a level above the applicable criteria, place a geotextile membrane to protect the backfill soil in the excavation. If soils of the bottom of excavations are contaminated at a level above the applicable criteria continue excavation down to a level where the applicable criteria are met.

PART 2 PRODUCTS

.1 Not used.

PART 3 EXECUTION

.1 Not used.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 74 21 - Construction/Demolition Waste Management And Disposal.

.3 Section 35 31 24 - Stone production.

.4 Section 35 31 25 – Stone placement.

1.2 MEASUREMENT AND PAYMENT

.1 Mobilization/demobilization of equipment will not be measured for payment.

.2 Construction and maintenance of haul roads will not be measured for payment.

1.3 REFERENCES

.1 American Society for Testing and Materials (ASTM)

- .1 ASTM C88, Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate.
- .2 ASTM C117, Standard Test Method for Material Finer than 0.075 mm Sieve in Mineral Aggregates by Washing.
- .3 ASTM C127, Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate
- .4 ASTM C136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
- .5 ASTM C535-e1 Standard Test Method for Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine

.2 Canadian General Standards Board (CGSB)

- .1 CAN/CGSB-8.1, Sieves, Testing, Woven Wire.
- .2 CAN/CGSB-8.2, Sieves, Testing, Woven Wire, Metric.

1.4 SUBMITTALS

.1 Samples

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Inform Departmental Representative of proposed source of materials and provide access for sampling at least 3 weeks prior to commencing Work.
- .3 Submit to Departmental Representative stone's test data for approval.

.2 Submit for review by Departmental Representative proposed method of handling existing stone. Submission to cover phases of handling until final positioning at breakwater.

.3 At least 4 weeks prior to commencing work, Submit work schedule for approval by Departmental Representative.

1.5 DELIVERY, STORAGE AND HANDLING

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

.2 Replace defective or damaged materials with new.

1.6 WASTE MANAGEMENT AND DISPOSAL

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

PART 2 PRODUCTS

2.1 GENERAL

.1 All the stones shall comply with the entire range of requirements herein set forth and to Section 35 31 24 – Stone production. The Departmental Representative may, at any time during construction and throughout the project, refuse materials at the source or the worksite if they do not meet requirements. Materials delivered to the worksite and rejected either in a stockpile or after placement in the work, shall be removed at Contractor's expense.

.2 In this project, the control plan and QC & QA activities shall systematically apply throughout both the quarrying and construction phases.

2.2 TRIALS

.1 At least three (3) weeks prior to stone production start-up, Contractor shall notify Departmental Representative of proposed source of materials.

.2 A minimum of two (2) weeks is included in this three (3) weeks period for laboratory tests.

.3 The Departmental Representative may require other tests during the execution of the work.

.4 The Department Representative will be responsible for the cost of laboratory trials, otherwise trial show non-conformance.

.5 Stone samples to be submitted at any time for laboratory testing shall be taken in the presence of the Departmental Representative or of a representative of the designated laboratory.

.6 Contractor shall submit report of stone delivered on worksite.

Table 1 – Required tests on stone quality – Methods and acceptance criteria

Test name	Test method	Acceptance criteria Imported Stone
Field observations / Visual Inspection / Assessment		
Field examination [1]	ASTM D4992-07	No conglomerates No delirious materials; good to excellent quality for intended
Petrographic examination [2]	ASTM C295-03	No delirious materials; good to excellent quality for intended
Watering grade	Visual	1A – fresh, unweathered rock 1B – faintly weathered rock (staining on major discontinuity surfaces)
Laboratory testing		
Bulk specific gravity, SSD	ASTM C127-07	≥2.65
Water absorption [3]	ASTM C127-07	≤0.5%
Water resistance micro-Deval [4]	ASTM D6928-06	≤15%
MgSO4 Soundness	ASTM C88-05	≤1.5% loss after 5 cycles

Notes:

1 The field examination shall include the preparation of a written report that includes a summary of the quarry and proposed quarry development plan as per ASTM D4992-07, including : general lithology, geologic unit and age, source homogeneity, stratigraphic faces; metamorphic and weathering phases; dip, strike and thickness of the bedding; proposed blasting procedure and expected curing time.

2 Petrographic examinations shall be repeated before AND after the MgSO4 soundness testing. Petrographic examination shall be summarized in a written report that includes the presence of micro- fractures and/or signs of induced stress (and therefore possible stress release – ref. paragraph 3.2) that may be of concern for the proposed use.

3 Water absorption test shall be repeated on five (5) different pieces of rock.

4 Wear resistance test shall be repeated on two (2) different pieces of rock

2.3 STONE SORTING

.1 Pilot stones indicating the limits of stone size will be weighed and placed near worksite to ease the selection of stone.

2.4 TOLERANCE ON WEIGHT AND SHAPE OF STONES

.1 At least 90% in weight of stones of a category placed in structure shall be comprises between weight limits of the category.

.2 No more than 5% in weight of stones of a category, shall weight between 0.75 to 1 time the minimal weight required for that category.

.3 All stone weighting less than 0.75 time the minimal weight or more than 1.25 the maximum weight of the category will be refused, deduced from quantity and transported out of worksite. Fees for transport of refused stone will be to Contractor responsibility.

.4 Stones of a category have to be uniformly divided into size in all breakwater, in order to avoid creating sections of breakwater with concentration of the same size of stone inside a given category.

2.5 STONE GRADATION AND SHAPE

.1 The methods used for production, transportation and placement must be adjusted to the needs in order to ensure that the materials placed in the final stage are within the prescribe range for weight. Stones must therefore undergo gradation testing and shall not display discontinuities or defects in their individual size ranges.

.1 For gradation testing, a random sample of stones must be collected weighing at least 25 times the average weight of stones in the category. Each individual stone in the sample shall be measured over three (3) mutually perpendicular axes. The dimensional ratio and the weight of each stone shall be estimated using the unit weight of the type of rock at hand per unit of volume measured and shall be recorded in a table.

.2 In addition, the weight of the whole sample shall be measured. This information is used to produce a "correction factor" to adjust the estimated weight of stones with regard to their actual weight. Each stone in the sample may also be weighed individually. With this data, a gradation chart can be established for the sample.

.3 Although it is required that an adequate spreading over the entire range of sizes be obtained each category, at least 50% of the stones – in numbers, shall be heavier than the average weight of the stones.

.4 Stones shall display an angular or blocky shape with a maximum 3/1 dimensional ratio (1/d).

.5 In each category, only ten percent (10%) of the stones – in numbers, may display a dimensional ratio in excess of 2,5/1.

.6 Stones with a dimension ratio comprised between 2.5 and 3.0 shall never be placed flat or under water level.

.7 Stones with a dimension ratio over 3 will be refused.

2.6 THEORICAL QUANTITIES

.1 In order to guide the Contractor in the quantities preparation of his tender, the Department Representative estimates the quantities of each stone category.

PART 3 EXECUTION

3.1 PREPARATION

.1 Haul roads: construct and maintain haul roads.

.2 If required, install traffic lights on floating equipment in accordance with international regulations, and maintain on board a radio operator system.

.3 Install and keep in good state buoys, direction signs, bench marks and traffic lights used to delimit work site.

.4 Stake and maintain the work based on the proper reference and control points

provided by the Departmental Representative. The Contractor shall be responsible for the accuracy of the work in relation to proper reference points, control points and baselines. Obtain written permission from the Departmental Representative before establishing reference points or placing markers on private property and pay all rental fees arising from this practice. If necessary, repair any damage to private property to the satisfaction of the Departmental Representative and pay all costs arising from this work. Provide all additional control points (over and above those indicated) necessary for the proper execution of operations. Throughout the project, ensure that all control points remain in good condition.

.5 If necessary, install and maintain in good condition the landmarks used to locate and define the boundaries of designated work areas. The benchmarks used must be appropriate to control work and bathymetric survey operations. Provide the labour and equipment needed for the construction of these benchmarks. Remove the benchmarks once the work is completed.

3.2 QUALITY CONTROL DURING PRODUCTION

.1 The Contractor shall carry out Quality Control activities throughout the stone production and placement period as required in this section and in section 01 45 00 – Quality control.

.2 The weighing of stones, or their re-measurement, shall be carried out to ascertain the calculated weight either when the Departmental Representative questions the size of stones or when the inspector deems it appropriate.

.3 Drop tests shall be carried out when the Departmental Representative questions the quality or integrity of stones or when the inspector deems it appropriate. Drop tests shall be carried out as follows:

- .1 Visual inspection of the stone on all sides; marking/recording of all existing cracks;
- .2 Lift the stone to 3 m and drop it onto a rigid surface (bedrock or stone of similar size);
- .3 Visual inspection of the stone on all sides to identify existing and/or developing cracks;
- .4 Repeat at least three times as directed by the Departmental Representative;
- .5 The stone is acceptable for the intended purpose if existing cracks have not open and no new cracks have developed.

.4 The Contractor is notified that adverse weather conditions (rain, snow, ice, frost and mud) may hide or conceal defects that would otherwise have been identified. Winter conditions may postpone the required inspection of stones until the next Spring. Stones shall not be shipped to the worksite before their inspection.

.5 Except where gradation tolerances allow it, any broken or cracked stone, stones that do not meet gradation standards and stones that are not correctly placed in the structure shall be removed and replaced with satisfactory stones. This corrective measure is at Contractor's expense. Rejected materials shall be removed from the worksite without delay. Such materials are excluded from measurement and

payment.

3.3 TRANSPORT AND TEMPORARY STORAGE

.1 The Contractor shall take charge of the transportation and storage of the stones and ensure that stockpiles are not contaminated with dirt or other substances; he shall also inhibit size segregation of stockpiled material.

.2 The Contractor shall implement measures to prevent introduction of invasive alien species in accordance with Section 01 35 43 – Environmental Procedures

.3 The storage of stones after shipment from the quarry and before permanent placement into the structure shall be submitted to the Departmental Representative for approval.

.4 Underwater storage of stones is not authorized.

3.4 MEASUREMENT OF STONE

.1 All stone materials shall be measured for payment by metric ton unit (1000 kilograms), for material acceptably placed in the work according to certified scale tickets as follows and Section 01 11 01 – Summary of Works:

.1 The Contractor shall proceed to the installation and the certification of an electronic weigh scale at the barge leading site(s) before shipping the stones. Weigh scale shall be of register type and have a sufficient size and capacity to weigh the stone and their means of transportation. The size of weight scale shall allow the receiving of all the wheels of the means of transportation used by the Contractor or the subcontractor.

.2 The Contractor shall supply each day to the Departmental Representative scale ticket copies for all stones delivered on site, separated by category.

3.5 TERMINOLOGY

.1 In the description of the stone construction, one must refer to the survey control line (CL) and the neat lines. The following definitions shall apply to those items:

.1 Survey control line (CL) – Line shown on the contract drawings to which all breakwater surveys shall be referenced;

.2 Neat lines – Solid lines shown on the contact drawings which depict the limits of the various types of stone materials. Tolerances for the placement of the stones described in this section are perpendicular to these neat lines.

.3 The word “ton” (t) refers to the metric ton (1 m.t. = 1000 kg).

3.6 RUBBLE MOUND

.1 The Contractor is free to choose the construction process. However, he shall be held responsible for any damage caused during construction and shall make good the work at his own expense and to the Departmental Representative’s satisfaction. It would be preferable for the Contractor to place armour stone as work progresses.

.2 The Contractor shall use suitable equipment to place the stones in the correct location and on the grades and slopes shown on drawings. He shall replace any badly placed stones at his own expense.

.3 Before placing the stone, ask Departmental Representative to check alignments.

.4 Discharge of armour stone will not be allowed. Place each armour material, stone by stone, starting from the bottom of slope and so that stone is stable and in contact with all adjacent stones.

3.7 CORE STONE

.1 Place core material to lines, grades and dimensions as indicated. Use dredged material, crushed concrete or quarry-run as indicated on drawings.

.2 Use the dredged sediments if they are granular, concrete debris or quarry-run, as indicated on plans.

3.8 ARMOUR AND FILTER STONE

.1 Place armour stones and filter stones to lines, grades and dimensions as indicated.

.2 Place armour stone in courses to total layer thickness as indicated on drawings.

.3 Place each stone or dolosse in stable position.

.4 Place stone to obtain an optimal stability and criss-cross action.

3.9 DEFORMATION

.1 In case of deformation of any part of the work during construction or after construction but before acceptance, the Contractor shall remove the displaced materials and rebuild this portion of the structure using either new materials or the displaced materials if deemed appropriate.

.2 Stone placement prior to the installation of the outer protection shall be at Contractor's own risk.

3.10 TOLERANCES

.1 Surfaces obtained shall not deviate from the lines and grades indicated on the contract drawings in a range of plus or minus the tolerances indicated below. Tolerances are measured perpendicularly to the indicated neat lines.

.2 Extreme limits of the tolerances given below shall not be continuous in any given direction over five (5) times the average dimension of a stone and/or over more than ten square metres of structure surface area.

.3 Any section of a stone course built to the upper tolerance limit shall not be in the immediate vicinity of a section built to the lower limit and vice-versa. In other words, transitions between tolerance limits shall be smooth.

MATERIAL	ABOVE CHART DATUM	BELOW CHART DATUM
Armour stone	40 cm	50 cm
Filter stone	25 cm	30 cm
Quarry-run	20 cm	30 cm

.4 In addition to the above-indicated perpendicular tolerances with reference to the slope, the horizontal position of every break in grade of finished stone courses shall be less than 60 cm to the indications on drawings. The variation shall not be systematic in one way or the other. Lines, arcs and curves lines shall be continuous and smooth, without visible deflection, bends or kinks.

.5 The above tolerances aim at ensuring that the work is constructed to the required heights, slopes and levels. Placed material that would not meet these requirements shall be removed or reworked as directed by the Departmental Representative.

3.11 CIRCULATION ON THE BREAKWATER

.1 Circulation on the breakwater is restricted by the width and the design of the structure. Construction of a temporary access road can be considered, but only if done using mats, geotextiles or other temporary working surfaces in order to make sure that there will be no remaining contamination of the breakwater with unacceptable materials. In all cases, the construction method of such temporary access road will have to be approved by the Departmental Representative.

3.12 DEBRIS

.1 Unless otherwise indicated by the Departmental Representative, all the timbers, the unsatisfactory materials and the debris within the construction zone shall be removed and become the Contractor's property. All the materials shall be disposed of as required in sections 01 35 43 – Environmental Protection and 01 14 00 – Work restrictions.

3.13 TURBIDITY CONTROL

.1 The Contractor shall control stone placement in such way to minimize water turbidity. Contractor operations shall comply with the requirements of Sections 01 35 43 Environmental Protection and 01 14 00 – Work restrictions.

3.14 ARTIFICIAL REEF

.1 Works involve the construction of ten (10) artificial reefs offshore in the Kegaska Bay, at two different locations.

.2 Each artificial reef measuring 20 m long by 10 m wide and is divided into 5 rectangular sections with stones of different sizes. Each reef comprises:

.1 A central section of 5 x 10 m, consisting of 23 m.t. of 100 to 200 mm stones.

.2 Two transition sections of 4 x 10 m, each consisting of 26 m.t. of 200 to 400 mm stones, for a total of 52 tons of stone. They are located on either side of the central section.

.3 Two end sections of 3.5 x 10 m, each consisting of 36 m.t. of 400 to 750 mm stone, for a total of 72 tons of stone. They are located at the ends of the reef.

.3 The reefs shall be built no later than November 15th, 2016.

.4 A complete bathymetric survey will be made by Departmental Representative, after work, to ensure that the height of the reefs do not exceed lower limit below chart datum required by the Navigation Protection Act. In the presence of improper height, Contractor shall return to site at its own expense and before December 31st, 2016 to make the necessary adjustments to avoid exceeding the required minimum depth.

3.15 VERIFICATION OF REEF COMPLIANCE

.1 Soon after reefs construction, in the fall, the Contractor shall conduct a verification of the general condition and compliance of work by an underwater video description.

.2 The Contractor shall hire a professional diving company to verify the compliance of reefs and their condition. A written report with video and pictures must be provided to Departmental Representative no later than January 15th 2017.

.3 Visual check in Diving

.1 Visual check by underwater video will be made for each reefs

.2 Video footage will be taken along the perimeter of the reef and along a band across the reef in the center line.

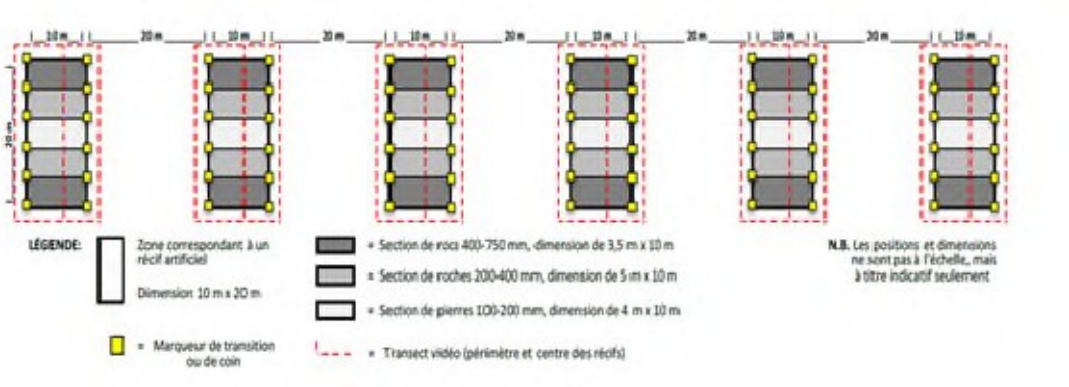
.3 The starting point of the video sequence of the perimeter of a reef will always be the same corner of the reef; this corner is permanently clearly marked.

.4 Going through the perimeter of the reef, the diver will identify his position by indicating each substrate transition (large, medium and small stones) and each corner. The camera will be oriented so as to get a view of the edge of the reef and the natural substrate.

.5 Divers shall clearly identify the transition between large, medium and small stones, as well as every corner of the reef. This will help detect physical changes of reef in subsequent evaluations of its integrity. The marking will be determined later, after a discussion with the divers.

.6 This is the experimental draft of visual underwater verification of artificial

reefs to be made after construction.



.4 Deliverables – Verification of reefs compliance

.1 A draft report should be submitted to Departmental Representative

.2 The final report must be provided to Departmental Representative 10 days after the receipt of comments on the draft. The final report in PDF format (including appendices) and all files in original format (Word, Excel for tables, jpeg for all photographs and Autocad for drawings) should be on the electronic medium.

.3 The report shall contain the following (without limitation):

.1 A brief background and objectives;

.2 Description of work and methodology used.

.3 A compact disc of the video of the compliance verification of reefs

.1 The video must be of DVD quality in high definition, be carried out under good visibility conditions. The diver must carry video as still as possible and ensuring that focus is adequate throughout the video. The video will be analysed by an independent consultant so it is essential that it be of high quality.

.2 Photographs could also be taken along transects.

.4 Mapping and location of each reef

.1 For each reef, submit the following information:

.1 Position corners

.2 Dimensions of stone size sections

.3 Reef Height

.4 Reef Depth

.5 Weather conditions, speed and wind direction, sea conditions, waves, underwater visibility

.6 Visual description by underwater video

.7 Qualitative description of the integrity and stability of the different sections of stones of reefs

.8 Brief description of the fauna and flora established on the reefs, seen in the video overview (locate observations on a general layout, identified to the species)

.5 Materials and equipment

.1 Contractor shall provide all materials and equipment for the implementation of audit work, and ensure the proper use of equipment.

.6 Sitemap

.1 Sitemap in electronic format (AutoCAD) and the final position of the reefs will be provided to the Contractor after the notice of acceptance of offer.

END OF SECTION

PART 1 GENERAL

1.1 SCOPE

.1 This section specifies the production of stone, including the decision-making process for acceptance of the supply sources of stone by the Departmental Representative. Also included are the tasks pertaining to quality control and to quality assurance. The Contractor is responsible for Quality Control (QC) and the Departmental Representative for the Quality Assurance process (QA).

1.2 RELATED SECTIONS

.1 Section 01 11 01 – Summary of Works

.2 Section 01 33 00 – Submittal Procedures

.3 Section 01 45 00 – Quality Control

.4 Section 35 31 25 – Rubblemound Breakwater and reefs

.5 Section 35 31 25 – Placement of Stone

1.3 REFERENCES

.1 The most recent issues of the standards listed below are integral to this section of the specifications within the indicated boundaries.

.1 American Society for Testing and Materials (ASTM)

.1 ASTM C88-05 : Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate

.2 ASTM C127-07 : Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate

.3 ASTM C136-06 : Sieve Analysis of Fine and Coarse Aggregates

.4 ASTM C295-03 : Petrographic Examination of Aggregates for Concrete

.5 ASTM D4992-07 : Evaluation of Rock to be Used for Erosion Control

.6 ASTM D6928-06 : Standard Test Method for Resistance of Coarse Aggregate to Degradation by Abrasion in the Micro-Deval Apparatus

.7 ASTM D7012-07 : Standard Test Method for Compressive Strength and Elastic Moduli of Intact Rock Core Specimens under Varying States of Stress and Temperatures

1.4 SUBMITTALS

.1 The following information and data shall be submitted to the Departmental Representative as required in Section 01 33 00 – Submittal Procedures.

.2 Information concerning the supply source of stones

.1 The Contractor shall provide the information listed below for all the proposed supply sources within fifteen (15) working days following the granting of the contract:

.1 name and location of the quarry;

.2 areas and lifts to be worked in the quarry;

.3 specific geological stratum or strata to be used;

.4 Laboratory test results representative of the quarry areas and strata to be developped (refer to table 1 for testing requirements and criteria);

.5 List of completed maritime engineering projects carried out with the same stone.

.3 Stone control plan and staffing

.1 The contractor shall submit in writing a control plan for stones within fifteen (15) working days following the award of the contract. The plan shall describe the means, methods and equipment to be provided, as well as the inspection and follow-up program during production, handling, transportation and placement of stones in a manner which shall result in satisfactory quality of in- place stone construction.

.2 The control plan shall include the name and the qualifications of the supervisor and of a licensed professional geologist. The specific qualifications and functions required of these persons are described in paragraph 1.7 below.

.4 Pre-production stones

.1 Within twenty-five (25) working days following the granting of the contract, the Contractor shall submit a set of pre-production stones for evaluation by the Departmental Representative. At least 25 pre-production stones shall be furnished for each stone category to be produced at each intended supply source. The specific requirements for pre-production stones are described in paragraph 1.8 below.

.5 Review of the stone control plan and staffing

.1 Should the Contractor choose to propose a review of the control plan for stones, he shall submit the new version of the plan at least five (5) days before its implementation date and the revised control plan shall not be implemented before the Departmental Representative has had time to examine the issues. Proposed changes in the staffing are also subject to assessment. Revisions required by the Departmental Representative in the control plan for stones and staffing shall follow the procedure described elsewhere in this section.

.6 Stone control plan reports

.1 The Contractor shall keep daily records of all the work carried out with respect to the approved control plan for stones. These reports shall be made available for examination to the Departmental Representative upon request. In addition, at the end of each week, the records shall be gathered and submitted weekly to the Departmental Representative. Daily reports shall be drafted daily by each inspector and they shall include the following information and data:

.1 Inspector’s name;

.2 Identification of the stone handling equipment in all the phases of the work and names of machinery operators who prepared the stone for inspection;

.3 Date of inspection of the stone;

.4 Weather conditions, including temperature;

.5 Weather conditions and date at which the stone was removed from the working face of the quarry; date of blasting and blasting details as the case may be;

.6 Blasting location and strata from which the stone are blasted in the quarry (horizontally and vertically);

.7 Color coding and other symbols and markings used by the inspector with aerosol paint to identify the stones individually sorted (and not mechanically sorted), and the rejected stones;

.8 Distribution of the approximate quantity of accepted and rejected stones processed during the day for the project, by category;

.9 Summary of main reasons for stone rejection during the day;

.10 Total quantity of stone shipped from the supply source at date of report, for each category.

.7 Testing: Submit all gradation testing for review, including testing data sheets, calculations and testing results in chart form.

1.5 TERMINOLOGY

.1 The expressions below are defined as follows:

.1 Aspect Ratio (l/d) – Ratio of the length (l) of the stone to its thickness (d) when measured over three mutually perpendicular axes. Stone length (l) is defined as the longest distance between two points on the stone (i.e., diametrically opposite corners of the stone block). Stone thickness (d) is defined as the minimum dimension between any two opposite faces of the stone.

.2 The term “ton” (t) refers to the metric ton (1 t = 1 000 kg).

1.6 QUALITY CONTROL

.1 The control plan for stones shall be included to the Contractor’s general quality control (QC) program as required in Section 01 45 00.

1.7 QUALITY CONTROL STAFFING

.1 General

.1 The Contractor shall assign a supervisor in charge of the overall process governing stone production control, as well as qualified inspectors at the quarry and at loading point. Further, the Contractor shall commission a licensed professional geologist to assist the supervisor as needed throughout the duration of the project. The staff shall ensure that all the stone produced, delivered at the worksite and placed in the structure is in accordance with the requirements in the contract documents and with the specifications.

.2 Supervisor’s qualifications and duties

.1 The supervisor is responsible for implementing all the elements in the control plan for stones. He has at least two years of specialized experience in the inspection and assessment of armour stone for marine projects. The experience must have been acquired in the quality assessment of the type and size of stone involved in the project at hand. Where the Contractor obtains the stones for this project from a subcontractor, the supervisor shall not be an employee of the latter. The supervisor shall be responsible for the implementation and fulfillment of the control plan for stones, including the management, control and assessment of the work performed by all the inspectors. He shall provide qualified inspection personnel at all times and replace any person whose performance is unsatisfactory. The supervisor is responsible for the

quality of all the stone produced.

.3 Geologist's qualifications and duties

.1 The geologist shall be qualified and licensed and have at least three (3) years of practical experience in the inspection and assessment of armour stone. He shall assist the supervisor in selecting the stone supply source; this includes visual inspection and petrographic assessment (ref. Table 1), identification of acceptable and unacceptable rock zones and layers at the quarry, and the selection of pre-production stones. Further, the geologist shall remain involved during the stone production period if the ongoing QC and QA (quality control, quality assurance) activities indicate that the quality of stones supplied does not comply with the requirements or is questionable; do as instructed by the Departmental Representative.

.4 Inspectors' qualifications and duties

.1 Inspectors shall hold adequate training and have at least one year of relevant experience to carry out in a capable and independent manner the tasks indicated below under the supervisor's general foremanship.

.1 Participate in the selection of pre-production stones and in the evaluation of stockpiled stones.

.2 Hold a clear and legible daily record of their activities and observations in a format to be approved by the Departmental Representative. Draft daily inspection reports and submit them as required.

.3 Proceed to visual examination of stones to assess whether they meet the quality criteria herein described. The inspection shall focus on the quality of the stone, fractures, stone geology and detrimental characteristics likely to cause deterioration and fragmentation of the stones after placement in the structure.

.4 Clearly mark every acceptable armour stone with spray paint using a colour and/or symbol system approved by the Departmental Representative. Unless otherwise directed, each stone of more than four (4) tons shall be suitably marked on three mutually perpendicular sides. Inspection duties also include identifying and marking stones that do not meet the acceptance criteria either for size, quality and/or shape. Mark rejected stones with an X in red aerosol paint on three (3) mutually perpendicular sides.

.5 Measure each stone on its three (3) perpendicular sides and reject any stone that does not meet the relation of the prescribed dimensions.

.6 Each armour stone must be weighed individually with sufficient equipment.

.7 Build and maintain separate stockpiles for each category of stone.

.8 Ensure that rejected stones are stockpiled in the "reject" pile or that they are removed without delay from the site after being marked. Rejected stones shall always be segregated from accepted stones.

.9 If the stones are shipped by barge, ensure that stone categories are segregated during loading and unloading; compile the tonnage of categories of stone for each barge load before releasing the shipment.

.10 Carry out regular verifications aimed at ensuring that the gages and other weighing devices fitted on the equipment accurately weigh the stones for

granulometry testing and quality control purposes.

1.8 PRE-PRODUCTION STONE

.1 Preparation

.1 The Contractor shall provide a collection of pre-productions stones within twenty-five (25) working days from the granting of the contract. The supervisor shall select the pre-production stones for evaluation by the Departmental Representative. Pre-production stones shall be arranged in rows at the supply source. At least twenty-five (25) pre-production stones shall be provided for each stone category to be produced from each supply source. They shall be typical of the areas, geologic units, faces and lifts in the quarry of origin where stone is to be produced; and typical of the stone quality to be produced and of the range of sizes specified for that category.

.2 Inspection of the pre-production stones

.1 The Contractor's supervisor and inspectors shall accompany the Departmental Representative in his inspection of the stones. The Contractor shall ensure that the stones are not covered with dust or mud and he shall provide the means required to turn the stones to facilitate the Departmental Representative's inspection of the pre-production material. The Departmental Representative shall mark the unsuitable stones with an X in red over three (3) mutually perpendicular sides. If twenty percent (20%) or more of the stones in a collection of pre-production stones are deemed unsuitable, the Contractor shall replace the rejected stones and another inspection shall ensue. Should, after two failed attempts, the Contractor is unable to provide a complete and adequate collection of pre-production stones, and the quarry shall be disqualified for the work of this contract. The Contractor shall then be invited to indicate a new supply source for approval. The Contractor is responsible for all costs incurred in the replacement of collected pre-production stones or changes in the supply source. No extension of the execution date set for this contract shall be granted due to changes in the stone supply sources.

.3 Maintenance of pre-production stone as examples

.1 Acceptable pre-production stones as well as typically unsuitable stones as established by the Departmental Representative shall remain at the quarry as examples (of the quality, size and shape requirements) throughout the stone shipment period of this contact. Each and all pre- production stones shall be clearly graded with its weight marked on the stone.

1.9 DECISION PROCESS FOR ACCEPTING STONE SUPPLY SOURCES AND STONE CONTROL PLAN

.1 The Departmental Representative reserves the right to conduct independent investigations and evaluations, where necessary, including other stone quality evaluations as shown in Table 1, in order to verify that compliant materials may be produced from the proposed supply sources. Additional testing may be carried out on stone samples selected by the Departmental Representative and paid for the Departmental Representative.

.2 The Departmental Representative shall decide on the acceptance or non-acceptance of the stone supply sources proposed by the Contractor, and on the control plan for stones and staffing, based the following information:

.1 Review of the information and data on the supply sources and control plan for stones

provided by the Contractor (ref. paragraphs 1.4.2 and 1.4.3).

.2 Visual inspection of the pre-production stones (ref. paragraph 1.8).

.3 Evaluation of the information and data regarding the quality requirements prescribed for the stones (ref. paragraph 2.3 and Table 1), the stone gradation and shape (ref. paragraph 2.4).

.4 Review of results of additional laboratory testing if need be (ref. paragraph 1.10.1).

.3 The Departmental Representative will provide a determination of acceptance or non-acceptance of the stone supply sources proposed by the Contractor, on the stone control plan and staffing within ten (10) working days following his inspection of the pre-production stones or the reception of additional laboratory test results whichever comes last.

.1 If the stone supply source and the stone control plan and staffing are deemed acceptable, the Contractor may then proceed with the production of materials providing they comply with the accepted pre-production stones.

.2 If the control plan for stones is rejected, the Contractor shall prepare and submit a new control plan –which may involve new staff, and obtain the approval of the Departmental Representative before proceeding with the production of stones for the work of this project. No further payment shall be issued for the work until an acceptable control plan is submitted to the Departmental Representative. The Contractor is responsible for all the costs involved in preparing a new plan. Moreover, no extension of the execution date set for this contract shall be granted due to changes in the control plan for stones.

.3 If the supply sources for stones are not approved, the Contractor shall find and indicate new supply sources and proceed to sampling and testing as required toward their approval by the Departmental Representative. All costs incurred by a change in supply sources shall be paid for by the Contractor. Finally, no extension of the execution date set for this contract shall be granted due to changes in the supply sources for stones.

.4 No extension of any milestone or deliverable due dates will be granted to compensate for the time spent by the Departmental Representative on the decision process aimed at accepting or declining the proposed supply sources.

1.10 QUALITY ASSURANCE

.1 General

.1 Quality assurance (QA) activities are conducted by the Departmental Representative. Quality assurance activities aim at providing independent observations on the compliance of stones with the requirements of this section before stones are shipped to the worksite. QA activities shall in no way relieve the Contractor of his obligations.

.2 The Contractor shall provide the machinery and the operators to turn and handle the unpromising stones that must be submitted to another evaluation by the Departmental Representative.

.3 Where the QA activities conducted by the Departmental Representative uncover non-compliance with the requirements of this section, the Departmental Representative will reject the non- compliant stones. Materials rejected at the source shall immediately be marked (with an X over three mutually perpendicular faces), segregated and removed from the storage area. In addition, materials rejected on the

project site shall be removed promptly and excluded from the measurement and payment process. The removal of unsuitable stones shall be at Contractor's expense.

.4 If, during his QA activities the Departmental Representative finds that the stone furnished does not meet the quality requirements or seems questionable, additional samplings and laboratory tests may be required. Stone sampling and the required testing shall be carried out as directed by the Departmental Representative. In this instance, the Contractor shall pay all costs involved in the additional sampling and laboratory testing of stones.

.5 Persistent non-compliance shall be sufficient reason to reject the control plan for stones as described in Section 1.9.3.2, and/or to reject supply sources as provided in Section 1.9.3.3.

.2 Gradation testing

.1 The Departmental Representative may conduct gradation evaluations for quality assurance purposes either at the source or at the worksite, in addition to the testing required from the Contractor. Quality assurance gradation evaluations shall be conducted at intervals determined by the Departmental Representative. The latter shall collect random stone samples for testing. Where the QA gradation test results or the observation of the stones indicate non-compliance with the specifications, the production procedures shall be modified and further gradation testing (both QC and QA) shall validate the corrective measures implemented.

.2 The Contractor shall provide the Departmental Representative with all the loaders, certified scales, machinery operators and labour as required to collect the samples, measure (or weigh) the stones individually and to weigh the whole sample.

PART 2 PRODUCTS

2.1 GENERAL

.1 All the stones shall comply with the entire range of requirements herein set forth. The Departmental Representative may, at any time during construction and throughout the project, refuse materials at the source or the worksite if they do not meet the requirements. Materials delivered to the worksite and rejected either in a stockpile or after placement in the work, shall be removed at Contractor's expense.

.2 In this project, the control plan and QC & QA activities shall systematically apply throughout both the quarrying and construction phases.

2.2 STONE SOURCES

.1 The Contractor is solely responsible for ensuring that the selected supply sources will be able to meet the delivery schedule and produce stones of the required quality in sufficient quantities for the project.

.2 If, as construction activities unfold, the Contractor is unable to provide acceptable stones in sufficient quantities from the original supply source, he may request an authorisation to use another source. All the expenses resulting from a change in the supply sources, including the required sampling and testing, shall be at Contractor's expense. In addition, no extension of the execution date set for this contract will be allowed

2.3 STONE QUALITY REQUIREMENTS

.1 General (all stone)

.1 All stone shall be highly resistant to weathering, deterioration and disintegration under freeze- thaw cycles and exposure to water, and of a suitable quality to ensure permanence in the structure and in the climate in which it is to be used. Stone shall be a rough broken stone from a quarry. Stone shall be durable, sound and free of cracks, seams and other defects that would tend to increase deterioration from natural causes or result in breakage during handling and/or placement. Inclusions of dirt, sand, clay, shale, of quartz or mica, pegmatite, oil or oil-stained stones, rock fines or any organic or other deleterious material will not be permitted, including iron sulphide veins or nodules.

.2 Stone

.1 Conglomerates materials WILL NOT be acceptable for this project regardless of the fact that they comply with the other acceptance criteria.

.2 Categories to be produced are as follows:

.1 4 tm to 6 tm

.2 2 tm to 3 tm

.3 Filter stones (different sizes)

.4 150 – 400 mm stone

.5 400 – 750 mm stone

.6 Quarry-run (mass density of the stone used for the production of the quarry-run shall be at least 2.60 tons/m^3).

.3 Stone sampling and testing method

.1 References concerning testing methods are listed above in Section 1.3 - References.

.2 Stone samples used in laboratory tests shall be typical of the lithological unit of each category of stone proposed for use in the work of this project.

.4 Reuse of stone excavated from the existing rock structures

.1 Stone excavated from the existing rock structures and wharf may be reused in the work of this project.

.2 The Contractor must dispose of all inacceptable and/or exceeding rock material.

2.4 STONE GRADATION AND SHAPE

.1 The methods used for production, transportation and placement must be adjusted to the needs in order to ensure that the materials placed in the final stage are within the prescribed range for weight. Stones must therefore undergo gradation testing and shall not display discontinuities or defects in their individual size ranges.

.1 For gradation testing, a random sample of stones must be collected weighing at least 25 times the average weight of stones in the category. Each stone in the sample must also be weighed individually. With this data, a gradation chart can be established for the sample.

Table 1 – Required stone quality testing – Methods and acceptance criteria

Test name	Test method	Acceptance criteria
Field Observations / Visual Inspection / Assessment		
Field examination [1]	ASTM D4992-07	no conglomerates no deleterious materials; good to excellent quality for intended use
Petrographic examination [2]	ASTM C295-03	no deleterious materials; good to excellent quality for intended use
Weathering grande	Visual	IA – fresh, unweathered rock IB – faintly weathered rock (staining on major discontinuity surfaces)
Laboratory testing		
Bulk specific gravity, SSD	ASTM C127-07	2.65 to 2.85
Water absorption [3]	ASTM C127-07	≤ 0.5%
Water resistance micro-Deval [5]	ASTM D6928-06	≤ 15
MgSO4 Soundness	ASTM C88-05	≤ 1.5% loss after 5 cycles
Petrographic examination [2]	ASTM C295-03	no deleterious materials; good to excellent quality for intended use

Notes:

1 The field examination shall include the preparation of a written report that includes a summary of the quarry and proposed quarry development plan as per ASTM D4992-07, including: general lithology, geologic unit and age, source homogeneity, stratigrafic faces; metamorphic and weathering phases; dip, strike and thickness of the bedding; proposed blasting procedure and expected curing time.

2 Petrographic examination shall be repeated before AND after the MgSO4 soundness testing. Petrographic examination shall be summarized in a written report that includes the rock's geological name, weathering grade, main constituents, texture, anisotropy and porosity. In addition, the report shall identify/discuss the presence of any constituents, presence of micro-fractures and/or signs of induced stress (and therefore possible stress release – ref. paragraph 3.2) that may be of concern for the proposed use.

3 Water absorption test shall be repeated on five (5) different pieces of rock.

4 Compressive strength test shall be repeated on three (3) different pieces of rock.

5 Wear resistance test shall be repeated on two (2) different pieces of rock.

.2 Although it is required that an adequate spreading over the entire range of sizes be obtained in each category, at least 50% of the stones – in numbers, shall be heavier than the average weight of the category.

.3 Stones shall display an angular or blocky shape with a maximum 3/1 dimensional ratio (l/d). In each category, only ten percent (10%) of the stones – in numbers, may display a dimensional ratio in excess of 2.5/1.

.4 The Contractor shall perform gradation testing on pre-production and production stone andreport the results as indicated in Table 2.

.5 The percentage of mass that passes through a 12.5 mm sieve of quarry run must not be greater than 10%.

2.5 FREQUENCY OF STONE INSPECTION AND TESTING

.1 The minimal frequency of stone quality testing, visual inspections and gradation testing required in the Contractor's control plan for stones is indicated in Table 2.

Table 2 – Stone quality assessment, visual inspection and granulometric testing frequency

Stone quality testing	Visual Inspection	Gradation testing
Pre-production testing for each source and at each geologic in the quarry (cf Table 1)	Continuous	Sample at every 3 000 tons for each category (cf paragraph 2.4)

PART 3 EXECUTION

3.1 STONE CURING AND WINTER QUARRYING OPERATIONS

.1 The Contractor shall conduct curing operations on freshly extracted stone to permit it to release stored energy and moisture and to ascertain that the stone will not fracture during the energy release and drying out phase. Stones shall be temporarily stockpiled at the quarry for a minimum period of ten (10) consecutive calendar days without any occurrence of freezing weather (0 ºC and over) before being inspected and approved for shipment to the worksite. Stones can be produced in winter, but final inspection and approval will not be done before spring. This requirement may be modified by the Departmental Representative depending on the quarry and the ongoing QC/QA activity results.

.2 If the stone is quarried during freezing weather (0 ºC and lower), the excess water retained in the rock could cause the rock to split. Each quarry selected by the Contractor for the production of breakwater stone shall be evaluated individually in order to determine the additional curing time without frost applicable as specified in article 3.1.1. Further, the following guidelines apply:

.3 Sedimentary rock quarries

.1 When the ambient temperature at the quarry reaches 0 ºC on average over 24 hours for three (3) consecutive days, this shall be considered as the date of interruption. May 15 will herein after be considered as the restart date. Stone shall be blasted at least two (2) days before the interruption date or special procedures must be followed.

.2 Stone blasted within two (2) weeks of the interruption date will be accepted only if suitable guaranteed storage is provided and maintained by the Contractor in order to allow their inspection after the restart date. Special stockpiling and handling techniques must be used to produce suitable stones after the quarry cut-off day or during freezing weather.

.3 It is the Contractor's responsibility to establish a production schedule and to manage the operations in order to produce sufficient quantities of suitable stones during the project.

.4 Igneous and metamorphic rock quarries

.1 There are no special restrictions for quarrying or drying operations due to weather conditions. Nevertheless, a ten-day (10) curing period is required after blasting as required in article 3.1.1.

3.2 QUALITY CONTROL DURING PRODUCTION

.1 The Contractor shall carry out Quality Control activities throughout the stone production

and placement period as required in this section and in Section 01 45 00- Quality Control.

.2 The weighing of stones, or their re-measurement, shall be carried out to ascertain the calculated weight either when the Departmental Representative questions the size of stones or when the inspector deems it appropriate.

.3 Drop tests shall be carried out when the Departmental Representative questions the quality or integrity of stones or when the inspector deems it appropriate. Drop tests shall be carried out as follows:

.1 Visual inspection of the stone on all sides; marking/recording of all existing cracks;

.2 Lift the stone to 3 m and drop it onto a rigid surface (bedrock or stone of similar size);

.3 Visual inspection of the stone on all sides to identify existing and/or developing cracks;

.4 Repeat at least three times as directed by the Departmental Representative;

.5 The stone is acceptable for the intended purpose if exiting cracks have not open and no new cracks have developed.

.4 The Contractor is notified that adverse weather conditions (rain, snow, ice, frost and mud) may hide or conceal defects that would otherwise have been identified. Winter conditions may postpone the required inspection of stones until the next spring. Stones shall not be shipped to the worksite before their inspection.

.5 Except where gradation tolerances allow it, any broken or cracked stone, stones that do not meet gradation standards and stones that neither are nor correctly placed in the structure shall be removed and replaced with satisfactory stones. This corrective measure is at Contractor's expense. Rejected materials shall be removed from the worksite without delay. Such materials are excluded from measurement and payment.

3.3 TRANSPORTATION AND TEMPORARY STORAGE

.1 The Contractor shall take charge of the transportation and storage of the stones and ensure that stockpiles are not contaminated with dirt or other substances; he shall also inhibit size segregation of stockpiled material.

.2 The storage of stones after shipment from the quarry and before permanent placement into the structure shall be submitted to the Departmental Representative for approval. Underwater storage of stones is not authorized.

3.4 PLACEMENT OF STONES

.1 For stone placement requirements Refer to Section 35 31 25 – Placement of Stones.

END OF SECTION

PART 1 GENERAL

1.1 SCOPE

.1 This section covers all the required operations for the placement of stone toward the construction of the breakwater.

1.2 RELATED SECTIONS

.1 Section 01 11 00 – Summary of Works

.2 Section 01 33 00 – Submittal Procedures

.3 Section 01 35 43 – Environmental Protection

.4 Section 01 41 00 – Regulatory Requirements

.5 Section 01 45 00 – Quality Control

.6 Section 03 30 00.01 – Cast-in-Place Concrete

.7 Section 31 32 19.01 – Geotextiles

.8 Section 35 31 24 – Production of Stone

1.3 SUBMITTALS

.1 The following information shall be submitted to the Departmental Representative as required in Section 01 33 00 – Submittal Procedures.

.1 Construction equipment and procedures

.1 At least (10) working days before work commencement, the Contractor shall submit his construction procedures which must include:

.1 list of all equipment and machinery to be used;

.2 detailed method of placement for each category and the placement sequencing;

.3 example of daily stone placement report.

.2 Inspection techniques and surveying methods.

.1 At least (10) working days before undertaking the placement of stones in the structure, the Contractor shall provide the Departmental Representative with the following information for review:

.1 Inspection techniques and evaluation criteria for stone placement.

.2 Detailed surveying methods implemented to ensure accurate placement, including alignment, leveling and the control of transverse sections during construction.

.3 After review by the Departmental Representative, this submittal shall be included in the detailed quality control plan (QCP).

.1 Installation and certification of weight scale(s).

.1 The Contractor shall make arrangements for the installation and certification of an electronic weigh scale at the quarry loading site(s) before shipping the stones as required in paragraph 1.4.1 Weigh scale installation and certification are

provided at Contractor's expense.

.2 At least five (5) working days before loading, submit the details concerning the location and the type of weigh scale installed for the purpose of the project as well as a document certifying the accuracy of the scale(s) under the *Weights and Measures Act* (R.S., 1985, c. W- 6).

.4 Weigh scale operators

.1 The Contractor shall provide weigh scale operators and assume all costs.

.5 Other weighing devices

.1 Submit the details of the devices used to weigh individual stones. The contractor will assume the costs of these devices.

.6 Certified weight scale tickets

.1 A copy of each weight scale tickets, including certification of exact weight, time of weighing and of delivery shall be submitted to the Departmental Representative within one (1) working day after weighting.

.7 Existing conditions and verification survey data

.1 A copy of the record of each verification survey, including existing conditions, shall be submitted to the Departmental Representative within one (1) working day after the survey. Provide submittal in both hard copy and digital formats.

.8 Stone placement reports

.1 The Contractor shall submit daily stone placement reports. The reports shall display, as a minimum, the following information: an estimate of the total tonnage placed; chaining along the control line (LC) between which stones were placed; and the total placement time. The Contractor shall also update work progress drawings indicating (i) dates and locations of stone placement and (ii) verification surveys for each layer of stone, for review by the Departmental Representative at any time.

1.4 MEASUREMENT OF STONE

.1 All stone materials shall be measured for payment by metric ton unit (1 000 kilograms), for material acceptably placed in the work according to certified scale tickets as follows and Section 01 11 01 – Summary of Works:

.1 The Contractor shall proceed to the installation and the certification of an electronic weight scale at the quarry prior to transport. Weigh scale shall be of sufficient size and capacity to weigh the stones and transportation, and register measured weight. The size of weigh scale shall allow the receiving of all the wheels of the transportation trucks used by the Contractor or the subcontractors.

.2 The Contractor shall supply each day to the Departmental Representative scale ticket copies for all stones delivered to site, separated by category.

.3 A suitably lit, heated and furnished shelter shall be provided near the scale.

.4 Prior to using scale, obtain the certificate of conformity with regulations of the law of the weights and measures, chapter 36, and the amendments subsequent of Statutes of Canada 1976-1977. Post certificate in a prominent position inside the shelter.

.5 Provide, install and maintain scales and scale shelter at location approved by the Departmental Representative.

.6 Maintain scale platform and scale mechanism clean and free from gravel, asphalt, snow, ice and debris.

.7 Maintain approach ramps in good condition free from sags and ruts.

.8 Check the balance and obtain another certificate if required by Departmental Representative.

.9 The Departmental Representative at the scale will carry out the material weighing which will be measured according to the mass and will sign the tickets.

.10 The Contractor will supply three (3) specimens of tickets with a numerical order in a sufficient quantity.

1.5 TERMINOLOGY

.1 In the description of the stone construction, one must refer to the survey control line (CL) and to neat lines. The following definitions shall apply to those items:

.1 Survey control line (CL) - Line shown on the contract drawings to which all breakwater surveys shall be referenced.

.2 Neat lines – Solid lines shown on the contract drawings which depict the limits of the various types of stone materials. Tolerances for the placement of the stones described in this section are perpendicular to these neat lines.

.3 The word “ton” (t) refers to the metric ton (1 t = 1 000 kg).

PART 2 PRODUCTS

2.1 STONE

.1 All the stone used on this project shall meet the requirements of Section 35 31 24 – Production of Stone.

PART 3 EXECUTION

3.1 QUALITY CONTROL OF STONE PLACEMENT

.1 General

.1 The Contractor is responsible for Quality Control, and shall establish and maintain a Quality Control Plan (QCP) as required in sections 01 45 00 - Quality Control and 35 21 24 - Production of Stone.

.2 The Contractor shall keep records of all quality control tests, surveys, inspections, including corrective measures implemented and provide copies to the Departmental Representative.

.2 Survey control

.1 The Contractor shall provide range poles, marker buoys, templates, batter-boards and/or any other means of guidance and control required to place the successive stone layers within construction tolerances.

.2 The Contractor shall provide and maintain chainage markers at 10 m intervals along the crest of the breakwater over the entire length of the work area. Chainage markers shall be visible in both directions along the chaining.

.3 Control markers are described in the project drawings. The provisional vertical and horizontal control markers shall be kept in the immediate vicinity of ongoing work.

.4 Supply, install and maintain tide gauges – with stilling tubes if needed, to allow both the Contractor and the Departmental Representative to read tide height at any desired time during the project. The tide gauges must be graduated in metres (1 m and 25 cm increments) and have graduation marks at 25 cm intervals. Install the instrument to allow direct reading of water level with reference to tidal datum. The type of instrument and its location shall be approved by the Departmental Representative.

.3 Verification surveys

.1 Object

.1 The Contractor shall carry out verification surveys as work progresses to ensure that the lines, elevations and bedding thicknesses of work are within specified tolerances.

.2 Verification surveys are used by the Departmental representative to estimate the excess stone volume (beyond tolerance limits), if the Departmental representative allows such stone to remain in place. This volume shall be converted to weight and be subject to deductions from contract payment quantity.

.2 Scope

.1 Verification surveys on the existing structure are required before and after excavation, and then for each layer of stone placed. Each verification survey shall consist of cross-sections of the structure carried out by the Contractor at intervals of ten metres (10 m) along the control line (CL).

.2 For the half-circular end of the breakwater, radial sections shall be taken at 15-degree intervals from the center. Verification surveys shall be carried out from the same locations along the CL of the half-circular section and along the radials before and after the excavation and placing of stone.

.3 Take elevation readings at 1,5 m intervals and at every theoretical break in grade, to a distance not less than 3 m beyond the limits of the stone course being surveyed. Carry out other elevation readings as directed by the Departmental Representative.

.4 Other cross sections spacing and reading intervals may be used if deemed appropriate by the Departmental Representative.

.3 Equipment

.1 Carry out verification surveys using a DGPS, a total station survey instrument and prism, a surveyor's level, measuring rod and surveyor's tape, tagline; or other methods in accordance with this section and subject to Departmental Representative's approval. If measuring rods or prisms are used, these devices shall be fitted with a flat, durable 30 cm diameter base.

.2 Carry out depth measurement by physical contact with the stone using, for example, sounding poles or lead-lines. Sonic or electronic measurements are not authorized

for depth measurement. Accuracy shall be better than 6 cm.

.3 Other measurement methods using sonic or electronic methods may be considered subject to approval by the Departmental Representative. The Contractor shall submit evidence of the accuracy of any other method and submit detailed comparison with measurements done by physical contact for all courses of stone.

.4 The Contractor shall provide the boats, the personnel and all the equipment required to carry out verification surveys safely.

.4 Execution

.1 Above water surveys shall be undertaken using conventional land surveying methods. For underwater surveying, the Contractor shall move by boat or platform as needed, to each required reading location to cover the whole structure, including the tidal zone.

.2 All survey verifications are conducted using the survey control line (LC) and chart datum (CD).

.3 Survey verifications shall be carried out in the presence of the Departmental Representative unless the latter declines to attend.

.4 For each verification survey carried out, the Contractor shall provide the Departmental Representative with a record of verification surveys displaying the following information:

.1 location of the verification survey (station along the control line);

.2 category of stone surveyed;

.3 date and time of the survey;

.4 weather conditions;

.5 tide gauge readings at the time of the survey;

.6 name of participants;

.7 field notes;

.8 plot on cross-section paper showing the control line, neat lines and individual elevation readings.

.5 The exact format of the verification survey record shall be agreed upon by the Departmental Representative and the Contractor.

.6 The verification surveys of the underlying material (i.e., the existing structure, or the excavated structure, or the previously placed course of stone) carried out by the contractor involved shall be verified by the Departmental Representative before the next layer of stone is placed

3.2 STONE PLACEMENT

.1 General

.1 Stones shall be placed individually along reference lines and sloped as indicated on the contract drawings within the tolerances described in this section.

.2 Stones of the same category shall be evenly spread by size throughout the work in such way as to avoid concentrations of same size stones in the same area.

.3 The equipment used to place the stones shall be capable of placing the stones without dropping them from more than 0,3 m above final position; the equipment shall also allow to move the stones and rework their position if need be.

.4 Place the stones and ensure that they rest firmly onto the stones below and are in contact with surrounding stones to achieve adequate **encasement**. It may be necessary to change the arrangement of adjacent stones.

.5 Stones must be placed without regular pattern and randomly oriented in such way that joints with adjacent stones are not aligned.

.6 Perform outer slope finish as the layer of armour stone is placed. **The finished slope shall be even and without any voids larger than the filter stone.**

.7 The approval of stone placement and/or of survey verifications of a layer or portion of a layer is not a final acceptance. Stone work shall be considered final when the Departmental representative approves the placement and the verification surveys for all the layers in all the zones.

.8 Before final acceptance, any damage to the existing structure or to partially built or approved stone courses shall be repaired by the Contractor at own expense whether such damage results from Contractor's or subcontractors' operations, or from the action of wind, waves, tides or ice.

.9 At the end of each work day of placing stones, the Contractor shall provide the Departmental Representative with a written stone placement summary. The exact format of the stone placement summary shall have been determined and approved by the Departmental Representative prior to commencing stone placement. This summary shall include, at a minimum, the following: an estimate of the tonnage placed, chaining between which the stones were placed, and the total duration of placement for each type of stone.

.10 Place stones carefully and avoid damaging adjacent structures. In case of damage, all repair and/or replacement costs resulting from a lack of precaution shall be at Contractor's expense.

.11 Placement using any method likely to cause segregation in a given category of stone is not authorized. Placement shall begin at the toe of the slope and proceed upward. Placement of stone or moving by drifting or manipulating down the slope is not permitted. Final slope and elevation are to be achieved as stones are placed.

.2 Filter stone and quarry-run and reef stone

.1 End dumping and dozing of quarry-run material and of stones between are not authorized. Place by clamshell, dragline, backhoe or similar equipment to ensure that the materials are evenly distributed on the seabed or excavated structure or previously placed material. Stones shall not be released from higher than 0,6 m of final location.

.2 All the materials shall be placed evenly along the lines and slopes as indicated on the contract drawings and within tolerances as described in this section.

.3 Handle and place materials to minimize segregation, to yield an evenly arranged mass in terms of sizes, and to perform the required in situ gradation.

.3 Degradation/contamination of stone layers resulting from Contractor's operations

.1 The finished structure shall be free of undersize materials including materials used in the access road as well as fractured or other materials chosen by the Contractor to assist him in the construction. The use of mats, geotextiles or other temporary working surfaces for which removal can be verified is preferred. Any other method is subject to the approval of the Departmental Representative.

.2 Contractor is responsible to remove and replace any stone materials that are damaged/degraded during the works to the extent that they do not meet the requirements of these specifications.

3.3 DEFORMATION

.1 In case of deformation of any part of the work during construction or after construction but before acceptance, the Contractor shall remove the displaced materials and rebuild this portion of the structure using either new materials or the displaced materials if deemed appropriate.

.2 Stone placement prior to the installation of the outer protection shall be at Contractor's own risk.

3.4 TOLERANCES

.1 Surfaces obtained shall not deviate from the lines and grades indicated on the contract drawings in a range of plus or minus the tolerances indicated below. Tolerances are measured perpendicularly to the indicated neat lines.

.2 Extreme limits of the tolerances given below shall not be continuous in any given direction over five
(5) times the average dimension of a stone and/or over more than ten (10) square metres (m2) of structure surface area.

.3 Any section of a stone course built to the upper tolerance limit shall not be in the immediate vicinity of a section built to the lower limit and vice-versa. In other words, transitions between tolerance limits shall be smooth.

MATERIAL	ABOVE CHART DATUM	BELOW CHART DATUM
Armour stone	40 cm	50 cm
Stone for reef	35 cm	45 cm
Filter stone	25 cm	30 cm
Quarry-run	20 cm	30 cm

.4 In addition to the above-indicated perpendicular tolerances with reference to the slope, the horizontal position of every break in grade of finished stone courses shall be within +/- 60 cm the indications on the contract drawings. This variation shall not be systematic in one way or the other. Lines, arcs and curves lines shall be continuous and smooth, without visible deflection, bends or kinks.

.5 The above tolerances aim at ensuring that the work is constructed to the required heights, slopes and levels. Placed material that would not meet these requirements shall be

removed or reworked as directed by the Departmental Representative.

3.5 CIRCULATION ON THE BREAKWATER

.1 Circulation on the breakwater is restricted by the width and the design of the structure. Construction of a temporary access road can be considered, but only if done using mats, geotextiles or other temporary working surfaces in order to make sure that there will be no remaining contamination of the breakwater with unacceptable materials. In all cases, the construction method of such temporary access road will have to be approved by the Departmental Representative.

3.6 DEBRIS

.1 Unless otherwise indicated by the Departmental representative, all the timbers, the unsatisfactory materials and the debris within the construction zone shall be removed and become the Contractor's property. All the materials shall be disposed of as required in sections 01 35 43 -Environmental Protection and 01 41 00 - Regulatory Requirements

3.7 TURBIDITY CONTROL

.1 The Contractor shall control stone placement in such way as to minimize water turbidity. Contractor operations shall comply with the requirements of Sections 01 35 43 - Environmental Protection and 01 41 00 - Regulatory Requirements

END OF SECTION

PART 1 – GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 – Submittal Procedures

.2 Section 01 61 00 – Common Product Requirements

.3 Section 01 74 11 – Cleaning

.4 Section 01 74 21 – Construction/Demolition Waste Management and Disposal

.5 Section 03 30 00 – Cast-in-Place Concrete

.6 Section 05 14 15 – Aluminium Gangway

.7 Section 05 50 00 – Metal Fabrications

.8 Section 06 05 73 – Wood Treatment

.9 Section 35 59 29 – Mooring Devices

1.2 REFERENCES

.1 Unless otherwise stated, refer to the most recent publication and amendments to the following standards in effect on the date of entry into force of the contract.

.2 Canadian Standards Association (CSA)/CSA International

.1 CSA B111, Wire Nails, Spikes and Staples.

.2 CAN/CSA-G40.20/G40.21, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

.3 CAN/CSA-G164, Hot Dip Galvanizing of Irregularly Shaped Articles.

.4 CAN/CSA-O80 Series-08, Wood Preservation.

.5 CAN/CSA-W47.1, Certification of Companies for Fusion Welding of Steel Structures.

.6 CAN/CSA-W48, Filler Metals and Allied Materials for Metal Arc Welding.

.7 CAN/CSA-W59, Welded Steel Construction (Metal Arc Welding).

1.3 DOCUMENTS/SAMPLES TO SUBMIT FOR APPROVAL/INFORMATION

.1 Submit the required documents/samples as specified in Section 01 33 00 – Submittal Procedures.

.2 Submit shop drawings and data sheets for the following:

.1 Hardware

.2 Steel components (push arms, reinforcement plates)

.3 Treated wood

.4 High-density buoyancy billets

.5 Deck accessories: mooring cleats

.6 Drawing of the entire anchoring system, including chains, shackles, mooring anchors and component data sheets.

.3 The Contractor may not begin manufacturing work until all the shop drawings have been approved by the engineer.

1.4 SHOP DRAWINGS

.1 Submit the required shop drawings, including machining and mounting documents, as well as a list of equipment and materials in accordance with Section 01 33 00 – Submittal Procedures.

.2 The mounting drawings shall contain all the details and information required for assembly and mounting of the components, including:

.1 Working methods;

.2 Component mounting order;

.3 Type of equipment used for mounting;

.4 Details and adjustments to integrate existing gangways and the steel docks supplied by the owner.

1.5 QUALITY CONTROL

.1 Remove defective work items, even when built into the work, when the Departmental Representative finds and rejects such work items as non-compliant with the contract documents as a result of inconsistency with best practices or the use of defective materials or products. Replace or redo such items in keeping with the requirements set out in the contract documents.

1.6 TRANSPORT, STORAGE AND HANDLING

.1 Packing, shipping, handling and unloading

.1 The equipment and materials shall be transported, stored, handled and protected in accordance with Section 01 61 00 – Common Product Requirements.

.2 Handle parts to avoid permanent deformations.

.3 Carefully handle parts with a special factory finish.

.2 Storage and protection

.1 Protection covering surfaces shall not be removed until final cleaning. Supply the instructions necessary for removing this protection.

PART 2 – PRODUCTS

2.1 MATERIALS AND EQUIPMENT

.1 Steel

.1 Hot-dip galvanizing: as specified, galvanized steel components in accordance with standard ASTM A123/123M, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Production.

.1 Galvanize the various components in accordance with the following rates:

.1 Nuts and bolts: 460 g/m^2.

.2 Profiles, plates and bars: 705 g/m^2.

.2 All machine bolts, lag bolts, nails and the like shall be made of medium-duty galvanized steel in accordance with standard ASTM A-307, Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.

.3 Machine bolts and lag bolts shall have a forged head.

.4 Lag bolts shall be threaded.

.5 The lag bolt holes shall conform to the following:

.1 The pilot hole for the bolt shank must be the same diameter as the bolt shank and the same height as the bolt shank length without the thread.

.2 The diameter of the pilot hole for the threaded portion must be 60 to 75 percent of the diameter of the bolt shank for the length equal to the threaded portion of the bolt.

.3 The threaded portion of the lag bolt must be inserted into the pilot hole by turning with a wrench and not by using a hammer.

.4 Soap or any other lubricant that is not petroleum based may be used on the lag bolt or in the pilot hole in order to facilitate insertion and prevent damage to the lag bolt.

.2 Lumber

.1 FSC-certified timber.

.2 Spruce, red pine and Eastern hemlock shall meet the requirements of the latest standard grading rules of the Eastern Spruce Grading Committee approved and published by the Canadian Lumbermen's Association, the Quebec Lumber Manufacturers Association and the Maritime Lumber Bureau, with the exception of balsam fir, which shall not be accepted notwithstanding its inclusion in rule no. 1.

.3 All species of timber shall meet the NLGA requirements entitled "Standard Grading Rules for Canadian Lumber."

.4 Lumber grades shall be No. 1 or Standard, in accordance with the NLGA Standard Grading Rules for Canadian Lumber.

.5 All timber used to manufacture pontoons shall be pressure-treated with CCA (chromated copper arsenate), a preservative, in accordance with standard CAN/CSA-080-M. Net retention and penetration shall be those specified in these standards for marine applications, that is, a retention of 24 kg/m^3 (24 kg/m^3).

.6 The timber shall be double end trimmed at a right angle before treatment following

standard NLGA 748-B.

.7 All pressure-treated material requiring cutting in order to be adjusted shall be coated, while dry, with three (3) layers of preservative, as is required in standard CAN/CSA-080. All holes in timber pieces shall be treated in this fashion.

.1 Buoyancy billet

.1 Buoyancy billets shall be of high-density expanded polystyrene (20 psi minimum compressive applied load) and with a minimum buoyancy force of 276 kg/billet.

.2 Identification plate: each section of the floating dock shall be identified by a stainless steel plate 100 mm X 150 mm, allowing for annual assembly and disassembly.

2.2 FABRICATING

.1 To the extent possible, the structures shall be built and adjusted in the shop and be delivered ready to install.

PART 3 – EXECUTION

3.1 FLOATING DOCK MANUFACTURING

.1 Build floating docks made of treated wood to required dimensions and in accordance with drawings.

.2 All timber pieces shall be one length.

.3 Notches, holes and chamfers shall be treated using an equivalent preservative product prior to installation of the timber pieces.

.4 To prevent damage, protect buoyancy billets during construction and handling of floating docks.

.5 Floating docks shall not be placed directly on the ground. They shall be supported by wood pieces and be level.

.6 The structures shall be square, straight, aligned and consistent with the required dimensions, and the joints shall be tight and properly secured.

.7 To the extent possible, the structures shall be built and adjusted in the shop.

3.2 FLOATING DOCK INSTALLATION

.1 Install the floating docks in accordance with the required dimensions and as shown to create the configurations shown on the drawings.

.2 Build an anchoring system from anchors and chains, as specified in the drawings.

.3 Install the gangways and floating docks in keeping with the length of the existing gangways.

3.3 ON-SITE QUALITY CONTROL

.1 On-site testing and inspections

.1 Give the Departmental Representative at least ten days' notice before work is to begin on the floating docks and provide access to the structure for inspection purposes.

.2 Floating docks built entirely or partially without an inspection will not be accepted.

.3 The final inspection of the floating docks will be performed on-site.

3.4 CLEAN-UP

.1 Perform clean-up operations in accordance with Section 01 74 11 – Cleaning.

.2 Once the installation work and performance testing are finished, remove extra materials and equipment from the site, along with any waste, tools and machinery.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01 3300 Submittal Procedures

.2 Section 01 45 00 Quality Control

.3 Section 01 74 11 Cleaning

.4 Section 05 30 00 Cast-in-Place Concrete

.5 Section 31 53 13.01 Timber Cribwork

.6 Section 35 51 25 Floating Wharfs

1.2 REFERENCES

.1 American Society for Testing and Materials International (ASTM)

.1 ASTM A27/A27M, Standard Specification for Steel Castings, Carbon, for General Application.

.2 ASTM A48/A148M, Standard Specification for Steel Castings, High-Strength, for Structural Purposes.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-1.61, Exterior and Interior Marine Alkyd Enamel.

.2 CAN/CGSB-1.212, Chromate and Lead Free Marine Primer for Steel and Light Alloy Surfaces.

.3 Canadian Standards Association (CSA International)

.1 CSA G40.20/G40.21, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

1.3 OPERATING ENVIRONMENT

.1 Mooring devices will be located in a salt-water environment.

.2 Mean annual maximum and minimum temperatures are 30°C and -30°C.

1.4 DOCUMENTS/SAMPLES TO SUBMIT

.1 Product data: submit manufacturer's printed product literature, specifications and datasheet.

.2 Submit shop drawings, indicating or containing following items:

.1 Detailed description of structural items composing mooring devices.

1.5 QUALITY CONTROL

.1 Manufacturer's Instructions: submit manufacturer's installation instructions.

.2 Certificate of inspection to submit.

1.6 CLOSEOUT SUBMITTALS

.1 Provide operation and maintenance data for mooring devices.

.2 Include record drawings, both hard copy and electronic copy in AutoCad format.

PART 2 PRODUCTS

2.1 MATERIALS

.1 Mooring Cleat Type A

.1 Type B1 (capacity 5 tons) mooring cleats for floating wharfs must be : cast steel, according to ASTM A27/A27M grade 65-35, galvanized as indicated on the drawings.

.2 Anchor bolts, mechanical bolts and nuts: ASTM A307, galvanized and plate compliant to ASTM A36/A36M.

.3 Galvanization: to ASTM-A123/A123M-09, zinc (hot dipped), minimum 610 g/m².

.4 Welds: to CSA W59.

PART 3 EXECUTION

3.1 INSTALLATION

.1 Anchor bolts should be fastened to the templates that match the configuration of the bolts from the manufacturer of bollards and cleats. The templates are used to ensure that the bolts are in the right place during the implementation of the concrete.

.2 Bases of type B1 cleats should be level on the wheel guard. The drilled holes must be treated as per CAN / CSA-080. Seal holes with an approved water resistant sealant.

3.2 CLEANING

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

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

END OF SECTION

FISHERIES AND OCEANS CANADA

SMALL CRAFT HARBOURS

KEGASKA – NORTH SHORE

HARBOUR DEVELOPMENT

CONSTRUCTION SCOPE OF WORK

DETAIL ENGINEERING

ISSUE FOR BID

JUNE 27TH, 2016

PROJECT NO DFO-SCH #721181

PROJECT NO WSP #161-03779-00

WSP

SIGNATURES

PREPARED ET APPROVED BY

Mitchell Dufour-Milord, eng.
#OIQ : 5016765

REVISED BY

2016-06-27

Frédéric Tremblay, eng.
#OIQ: 139460

REV. No.	REVISIONS	DATE (yyyy-mm-dd)
C	Issue for bid	2016-06-27
B	Issue for review 66%	2016-05-19
A	Issue for review 33%	2016-03-30

TABLE OF CONTENT

APPENDICES

DOCUMENTS LIST

LISTS

NUMBER	REV.	NAME
PPB15-4068-E01-L02	A	Liste de câbles / Cable list
PPB15-4068-E01-L01	A	Liste d'équipements / Equipment list

ISSUE FOR CONSTRUCTION DRAWINGS

NUMBER	REV.	NAME
PPB15-4068-E01	C	Plan d'arrangement général, éclairage, services électriques / General layout plan, lighting, electrical services
PPB15-4068-E02	C	Coupes et détails / Sections and details
PPB15-4068-E03	C	Diagramme unifilaire nouveau cabanon électrique / Single line diagram new electrical shed 1ph, 3 fils /wires
PPB15-4068-E04	B	Plan d'arrangement nouveau cabanon électrique / New electrical shed layout plan
PPB15-4068-E05	B	Kégaska, Revitalisation du havre / Harbour development, Électricité / Electrical, Panneau de distribution #9 / Distribution panel #9
PPB15-4068-E06	D	Kégaska, Revitalisation du havre / Harbour development, Électricité / Electrical, Panneau de distribution #1, Distribution panel #1
PPB15-4068-E07	D	Kégaska, Revitalisation du havre / Harbour development, Électricité / Electrical, Unifilaire / Single line
PPB15-4068-E08	D	Kégaska, Revitalisation du havre / Harbour development, Électricité / Electrical, Localisation des équipements existants / Location of existing equipment

1.0 SCOPE OVERVIEW

Small Craft Harbours (SCH) of the Department of Fisheries and Oceans Canada (DFO) wishes to make the development of harbour facilities of Kegaska in Lower North Shore. As part of this development, new electrical installations will be carried out (lighting, electrical stations, etc.) and some existing installations will be rearranged.

Contractor shall bid on work and supply of equipment described in this scope of work.

2.0 CODES AND STANDARDS

All equipment, instruments, materials and installations shall meet the last edition of codes and standards requirements of organizations listed below:

- CSA Canadian Standard Association – Electrical Equipment
- ISA International Society for Measurement and Control
- NEMA National Electrical Manufacturing Association
- EEMAC Electrical and Electronic Manufacturer's Association of Canada
- ANSI American National Standards Institute
- IEEE Institute of Electrical and Electronics Engineer
- ULC Underwriters Laboratories of Canada

The above list is not exhaustive. The Contractor shall respect applicable federal, provincial and municipal laws and regulations.

Any difference between fabrication standards or special construction specification and manufacturer specification shall be brought to the Owner authorized representative's attention. Clarifications will be made prior to fabrication and/or installation.

2.1 CERTIFICATION

Electrical equipment and materials shall be CSA certified or equivalent.

2.2 SITE CONDITIONS

Exterior design temperature: -40^0C to 40^0C.

Interior design temperature: 30^0C.

All installation and equipment covered by this scope of work shall be designed to be fully operational and meet site conditions requirements.

2.3 SPECIFICATIONS – SMALL CRAFT HARBOURS (SCH)

Spécification no	Rev.	Description
-	2015-06-22	Guidelines for port installations

Note : Specifications available upon request.

2.4 CODES AND STANDARDS DISCREPANCIES

Any discrepancy found by the Tenderer (Contractor) between documents listed above shall be brought to the Owner's authorized representative for clarification.

2.5 "ISSUE FOR CONSTRUCTION" DRAWING

The Contractor shall execute the project based on "Issue For Construction" (IFC) and stamped by an engineer drawings only. These drawings are provided in this scope of work's appendix.

2.6 "AS-BUILT" DRAWINGS

During the project's construction, the Contractor shall keep track of all approved design changes made on site based on "Issue For Construction" drawings. These changes shall be recorded and marked up on the same IFC drawings.

Differences between IFC drawings and on site construction work shall be followed daily. A thorough follow-up will be conducted by the Owner. Any design changes shall be approved by the related responsible engineer prior to execution.

All documentation found with equipment and/or accessories shall be submitted to the Owner.

2.7 DRAWING INTERPRETATION

Differences between IFC drawings and this scope of work shall be brought to the Owner authorized representative's attention for clarification. In case of discrepancy between IFC drawings and applicable standards, interpretation of latter shall be established by the Owner's authorized representative.

2.8 CONFIDENTIALITY

All drawings, schematics, standards and specifications transmitted to supplier shall be considered strictly confidential and property of the Owner.

3.0 GENERAL

1. Contractor shall take into consideration that work related to activities listed in the present scope of work is not exhaustive and tender shall reflect all work related to the execution of this scope of work.

2. If documents provided to Contractor are not in accordance with reality and thereby prevent realization of the work as planned, the Contractor shall execute the work as instructed by the Owner's authorized representative.

3. Cable length as written in the cable list shall be considered as an approximate value, Contractor shall validate all cable lengths on site.

4. All installed cables and equipment shall be identified as specified on drawings and lists provided in appendix.

5. All accessories and /or hardware article not explicitly specified in this scope of work but required for proper installation of instruments and equipment as per Owner's standards, shall be supplied by Contractor.

6. Contractor shall submit test sheets required to ensure proper pre-commissioning and start-up of new installations to the Owner's authorized representative.

4.0 SCOPE OF WORK

4.1 BREAKWATER AREA

4.1.1 NEW ELECTRICAL SHED MAIN POWER (TO COME)

This section describes the work to be performed by a master electrician and the Contractor shall coordinate with a representative of Hydro-Quebec (HQ).

1. Ground the new electrical main power based on proper installation.

4.1.2 WORK TO BE DONE FROM NEW ELECTRICAL SHED

1. Install the main distribution panel (120/240V, 25kA) and the two 240V-600V, 50 kVA transformers and the 240V-600V, 37.5 kVA transformer as per drawing PPB15-4068-E04.

2. Ground the main distribution panel and the transformers to the grounding bar located in the new electrical shed.

3. Install two 15A-120V single gang service receptacles, one exterior wall mounted light, one lighting contactor and one photocell as per drawing PPB15-4068-E04.

4. Dismantle, cut at grade level and write « out of power » on both end of type « C » service station power cable.
(See drawing PPB15-4068-E06 for distribution panel 1)

5. Dismantle and remove both 10kVA, 600-120/240V, 1ph transformers located on type « C » service station and in the plant as per drawing PPB15-4068-E07.

6. Install all service stations, service transformers, breakers and lighting fixtures as per drawings PPB15-4068-E01 and PPB15-4068-E02.

7. Install and connect all power cables of the cable list.

   Note: Type SOOW cables between service transformers and service stations shall be installed through the closest footbridge. A channel tray is intended as such.

8. Install a tinned copper 2/0 AWG grounding single conductor from the grounding bar of the new electrical shed inside the cable trench all the way to the end of the breakwater.

9. Install a loop of a tinned copper 2/0 AWG grounding single conductor and bond each service transformer structure with a mechanical grounding lug to the trench's grounding conductor.

10. Identify all power cables and equipment as per drawings PPB15-4068-E01, PPB15-4068-E02 and PPB15-4068-E04.Supplying power to equipment

4.2 WHARF AREA

4.2.1 WORK TO BE DONE FROM EXISTING ELECTRICAL SHED

1. Install two 60A / 2 poles breakers in distribution panel 9 located in the existing electrical shed as per drawing PPB15-4068-E05.

2. Install and connect power cables of the type « B » service station 6 and Department of Fisheries and Oceans' (DFO) fishing hoist located on the wharf as per drawing PPB15-4068-E01 and cable list.

3. Make a splice on the power cable of the type « B » service station 6 and DFO's fishing hoist at the distribution panel 1 located in the plant. (See drawing PPB15-4068-E06 for distribution panel 1)

   Note: Write « Splice » and the « load's name » at the splice location on the cable.

4. Identify power cables and equipment as per drawings PPB15-4068-E01, PPB15-4068-E02 and PPB15-4068-E05.

4.3 TESTS AND STARTUP

1. Perform all the tests to ensure the proper functioning of all new installations.

2. Return all test sheets completed and signed to the Owner's representative.

APPENDIX A

CABLE LIST

PROJECT NO DFO-SCH #721181

PROJECT NO WSP #161-03779-00

						TITRE / TITLE KÉGASKA REVITALISATION DU HAVRE HARBOUR DEVELOPMENT			
A	2016-06-27	LISTE DE CÂBLES / CABLE LIST	M. DIENE SARR DIOUF	M. DUFOUR-MILORD	M. DUFOUR-MILORD				
Rev.	Date	Description	Par / By	Vérifié / Reviewed	Approuvé / Approved	NUMÉRO DE PROJET / PROJECT NO.:	161-03779-00	NUMÉRO DU DOCUMENT / DOCUMENT NO.:	PPB15-4068-E01-L02

No Rev.	DE (From)	VERS (Destination)	ISOLATION (Insulation)	TYPE DE CÂBLE ET CALIBRE (Cable type and size)	LONGUEUR (Length) (m)	CHEMINEMENT DU CÂBLE (Cable routing)	No Rouleau (Roll No)	No DIAGRAMME UNILIGNE (Single Line No)	No SCHÉMA DE CONTRÔLE (Control Schematic No)	No SCHÉMA D'INTERCONNEXION (Interconnection Schematic No)	REMARQUES (Comments)
A	PANNEAU DE DISTRIBUTION PRINCIPAL / MAIN DISTRIBUTION PANEL	TRANSFORMATEUR / TRANSFORMER 50 kVA (Nouveau cabanon / New shed)	1000V	2C #4/0 AWG TECK CU	30	LOCAL		PPB15-4068-E03			
A	PANNEAU DE DISTRIBUTION PRINCIPAL / MAIN DISTRIBUTION PANEL	TRANSFORMATEUR / TRANSFORMER 50 kVA (Nouveau cabanon / New shed)	1000V	2C #4/0 AWG TECK CU	30	LOCAL		PPB15-4068-E03			
A	PANNEAU DE DISTRIBUTION PRINCIPAL / MAIN DISTRIBUTION PANEL	TRANSFORMATEUR / TRANSFORMER 37.5 kVA (Nouveau cabanon / New shed)	1000V	2C #2/0 AWG TECK CU	30	LOCAL		PPB15-4068-E03			
A	TRANSFORMATEUR / TRANSFORMER 50 kVA (Nouveau cabanon / New shed)	DISJONCTEUR / BREAKER 80A (Station de transformateur / Service transformer 1)	1000V	2C #2 AWG TECK CU	120	TRANCHÉE DE CÂBLES / CABLE TRENCH		PPB15-4068-E03			
A	TRANSFORMATEUR / TRANSFORMER 50 kVA (Nouveau cabanon / New shed)	DISJONCTEUR / BREAKER 80A (Station de transformateur / Service transformer 2)	1000V	2C #2 AWG TECK CU	120	TRANCHÉE DE CÂBLES / CABLE TRENCH		PPB15-4068-E03			
A	TRANSFORMATEUR / TRANSFORMER 37.5 kVA (Nouveau cabanon / New shed)	DISJONCTEUR / BREAKER 60A (Station de transformateur / Service transformer 3)	1000V	2C #2 AWG TECK CU	220	TRANCHÉE DE CÂBLES / CABLE TRENCH		PPB15-4068-E03			
A	DISJONCTEUR / BREAKER 80A (Station de transformateur / Service transformer 1)	TRANSFORMATEUR / TRANSFORMER 50kVA (Station de transformateur / Service transformer 1)	1000V	2C #4 AWG TECK CU	5	LOCAL		PPB15-4068-E03			
A	DISJONCTEUR / BREAKER 80A (Station de transformateur / Service transformer 2)	TRANSFORMATEUR / TRANSFORMER 50kVA (Station de transformateur / Service transformer 2)	1000V	2C #4 AWG TECK CU	5	LOCAL		PPB15-4068-E03			
A	DISJONCTEUR / BREAKER 60A (Station de transformateur / Service transformer 3)	TRANSFORMATEUR / TRANSFORMER 37.5 kVA (Station de transformateur / Service transformer 3)	1000V	2C #6 AWG TECK CU	5	LOCAL		PPB15-4068-E03			
A	TRANSFORMATEUR / TRANSFORMER 50kVA (Station de transformateur / Service transformer 1)	ÎLOT DE SERVICE / SERVICE STATION C5	1000V	3C #2 AWG SOOW	30	LOCAL		PPB15-4068-E03			Rouge-Noir-Vert / Red-Black-Green
A	TRANSFORMATEUR / TRANSFORMER 50kVA (Station de transformateur / Service transformer 1)	ÎLOT DE SERVICE / SERVICE STATION C5	1000V	3C #4 AWG SOOW	30	LOCAL		PPB15-4068-E03			Rouge-Noir-Vert / Red-Black-Green
A	TRANSFORMATEUR / TRANSFORMER 50kVA (Station de transformateur / Service transformer 2)	ÎLOT DE SERVICE / SERVICE STATION A1	1000V	3C #4 AWG SOOW	60	LOCAL		PPB15-4068-E03			Rouge-Noir-Vert / Red-Black-Green
A	TRANSFORMATEUR / TRANSFORMER 50kVA (Station de transformateur / Service transformer 2)	ÎLOT DE SERVICE / SERVICE STATION B2	1000V	3C #4 AWG SOOW	60	LOCAL		PPB15-4068-E03			Rouge-Noir-Vert / Red-Black-Green
A	TRANSFORMATEUR / TRANSFORMER 37.5 kVA (Station de transformateur / Service transformer 3)	ÎLOT DE SERVICE / SERVICE STATION A3	1000V	3C #4 AWG SOOW	60	LOCAL		PPB15-4068-E03			Rouge-Noir-Vert / Red-Black-Green
A	TRANSFORMATEUR / TRANSFORMER 37.5 kVA (Station de transformateur / Service transformer 3)	ÎLOT DE SERVICE / SERVICE STATION A4	1000V	3C #4 AWG SOOW	60	LOCAL		PPB15-4068-E03			Rouge-Noir-Vert / Red-Black-Green
A	PANNEAU DE DISTRIBUTION PRINCIPAL / MAIN DISTRIBUTION PANEL CCT 9-11	CONTACTEUR D'ÉCLAIRAGE / LIGHTING CONTACTOR	1000V	2C #12 AWG TECK CU	30	LOCAL		PPB15-4068-E03			
A	PANNEAU DE DISTRIBUTION PRINCIPAL / MAIN DISTRIBUTION PANEL CCT 10-12	CONTACTEUR D'ÉCLAIRAGE / LIGHTING CONTACTOR	1000V	2C #12 AWG TECK CU	30	LOCAL		PPB15-4068-E03			
A	PANNEAU DE DISTRIBUTION PRINCIPAL / MAIN DISTRIBUTION PANEL CCT 13-15	CONTACTEUR D'ÉCLAIRAGE / LIGHTING CONTACTOR	1000V	2C #12 AWG TECK CU	30	LOCAL		PPB15-4068-E03			
A	CONTACTEUR D'ÉCLAIRAGE / LIGHTING CONTACTOR	ÉCLAIRAGE BRISE-LÂMES / BREAKWATER LIGHTING	1000V	2C #8 AWG TECK CU	300	TRANCHÉE DE CÂBLES / CABLE TRENCH		PPB15-4068-E03			
A	CONTACTEUR D'ÉCLAIRAGE / LIGHTING CONTACTOR	ÉCLAIRAGE BRISE-LÂMES / BREAKWATER LIGHTING	1000V	2C #8 AWG TECK CU	300	TRANCHÉE DE CÂBLES / CABLE TRENCH		PPB15-4068-E03			
A	CONTACTEUR D'ÉCLAIRAGE / LIGHTING CONTACTOR	ÉCLAIRAGE STATIONNEMENT / PARKING LIGHTING	1000V	2C #12 AWG TECK CU	60	LOCAL		PPB15-4068-E03			
A	PANNEAU DE DISTRIBUTION PRINCIPAL / MAIN DISTRIBUTION PANEL CCT 14	PRISES DE SERVICES ET ÉCLAIRAGE NOUVEAU CABANON	1000V	2C #12 AWG TECK CU	60	LOCAL		PPB15-4068-E03			
A	PANNEAU DE DISTRIBUTION / DISTRIBUTION PANEL 9, CCT 15-17	ÎLOT DE SERVICE / SERVICE STATION B6 (via panneau de distribution / via distribution panel 1)	1000V	2C #6 AWG TECK CU	60	LOCAL		PPB15-4068-E05			Une épissure devra être effectué au niveau du câble d'alimentation du panneau de distribution 1 qui se trouve dans l'usine. / A splice shall be done on the power cable at the distribution panel 1 level located in the plant.
A	PANNEAU DE DISTRIBUTION / DISTRIBUTION PANEL 9, CCT 11-13	TREUIL DE PÊCHE / FISHING HOIST (via panneau de distribution / via distribution panel 1)	1000V	2C #6 AWG TECK CU	60	LOCAL		PPB15-4068-E05			Une épissure devra être effectué au niveau du câble d'alimentation du panneau de distribution 1 qui se trouve dans l'usine. / A splice shall be done on the power cable at the distribution panel 1 level located in the plant.
A	CONDUCTEUR DE MISE À LA TERRE / GROUNDING CONDUCTOR		1000V	1C #2/0 AWG, CU, NU, ÉTAMÉ / TINNED	500	LOCAL		PPB15-4068-E03			

APPENDIX B

EQUIPMENT LIST

PROJECT NO DFO-SCH #721181

PROJECT NO WSP #161-03779-00

						TITRE / TITLE KÉGASKA REVITALISATION DU HAVRE HARBOUR DEVELOPMENT			
A	2016-06-27	LISTE D'ÉQUIPEMENTS / EQUIPMENT LIST	M. DUFOUR-MILORD	F. TREMBLAY	M. DUFOUR-MILORD				
Rev.	Date	Description	Par / By	Vérifié / Reviewed	Approuvé / Approved	NUMÉRO DE PROJET / PROJECT NO.:	161-03779-00	NUMÉRO DU DOCUMENT / DOCUMENT NO.:	PPB15-4068-E01-L01

Rev.	Item	Identification (Tag)	Description	Modèle (Model)	Dimensions (H x W x D) mm	Poids (Weight) kg	Qté. (Qty)	Unité (Unit)	Capacité (Ampacity) A	Icc Sym.RMS KA	Tension (Voltage) V	Puissance Réelle (Power) kW	Puissance (Power) kVA	No. Dessin de référence (Reference Drawing Number)	Manufacturier (Manufacturer)	Fourni par (Supplied by)	Installé par (Installed by)	Notes / Remarks
Nouveau Cabanon électrique / New electrical shed																		
			Panneau 120 / 240 V, 600 A, 25 kA, 1 Ph, 3 Fils, 27X avec disjoncteur principal de 600A / Panel with main breaker	P3aB1A6-27LGE	2286 x 508 x 146		1	ch	600	25	120/240				Eaton	Entrepreneur / Contractor	Entrepreneur / Contractor	
			Transformateur de type sec, NEMA 2, 37,5kVA, 600-120/240 V, 60 Hz, monophasé / Single phase transformer	CD1C0037VKA6XXLB	737 x 508 x 356	140	1	ch					37,5		Delta	Entrepreneur / Contractor	Entrepreneur / Contractor	
			Transformateur de type sec, NEMA 2, 50kVA, 600-120/240 V, 60 Hz, monophasé / Single phase transformer	CD1C0050VKA6XXLB	737 x 508 x 356	154	2	ch					50		Delta	Entrepreneur / Contractor	Entrepreneur / Contractor	
			Prise de courant double 15A-125 V, ACNOR, 5-15R / Receptacle	52CM62			2		15		125				Hubbell	Entrepreneur / Contractor	Entrepreneur / Contractor	
			Luminaire extérieur au mur type DEL / Wall mount exterior light	TWH LED 30C 50K			1				120				Lithonia	Entrepreneur / Contractor	Entrepreneur / Contractor	
			Contacteur d'éclairage dans un boîtier NEMA 1, coil de 240V, avec sélecteur AUTO-MAN / Enclosed lighting contactor with selector				1				240				Eaton	Entrepreneur / Contractor	Entrepreneur / Contractor	
			Cellule Photo électrique dans boîtier FS / Photocell in FS box	D2S240			1				240				Eaton	Entrepreneur / Contractor	Entrepreneur / Contractor	
Îlot électrique type "A" / Service station																		
			Disjoncteur 15A, 1pôle 120 V avec dispositif de détection des fuites à la terre (DDFT) / GFCI breaker	GFRST15W			6		15		120				Hubbell	Entrepreneur / Contractor	Entrepreneur / Contractor	
			Plaque couvercle à l'épreuve des intempéries / Weatherproof cover	52CM21			9								Hubbell	Entrepreneur / Contractor	Entrepreneur / Contractor	
			Plaque couvercle à l'épreuve des intempéries jaune / Yellow weatherproof cover	52CM21			6								Hubbell	Entrepreneur / Contractor	Entrepreneur / Contractor	
			Disjoncteur 30A, 2 pôles 240 V / Breaker	BR250			3		30		240				Eaton	Entrepreneur / Contractor	Entrepreneur / Contractor	
			Prise de courant double 15A-125 V, ACNOR, 5-15R / Receptacle	52CM62			6		15		125				Hubbell	Entrepreneur / Contractor	Entrepreneur / Contractor	
			Prise de courant simple verrouillable 30A-120/250 V, ACNOR, L14-30R / Receptacle	HBL2710			3		30		120/250				Hubbell	Entrepreneur / Contractor	Entrepreneur / Contractor	
			Plaque couvercle à l'épreuve des intempéries / Weatherproof cover	SS-723			3								Hubbell	Entrepreneur / Contractor	Entrepreneur / Contractor	
			Bloc de répartition 70A / Terminal block	ASTB85			9								Hoffman	Entrepreneur / Contractor	Entrepreneur / Contractor	
			Boîtier NEMA 4 en fibre de verre renforcé en polyester, muni de pentures non métalliques avec "latche" verrouillable en acier inoxidable, plaque de montage intérieure non métallique / Fiberglass enclosure with lockable latch in stainless steel and interior metallic plate	A24H2008GQRLP / A-24P20C	616 x 515 x 203		3								Hoffman	Entrepreneur / Contractor	Entrepreneur / Contractor	
			Plaque identification lamicoïde, lettrage de couleur blanc sur fond rouge, "AVERTISSEMENT PRISE POUR BATEAU SEULEMENT (Aucun appareillage électrique)" / Lamicoid plate with white letters on red backgrounc				6								Brady	Entrepreneur / Contractor	Entrepreneur / Contractor	
			Plaque identification lamicoïde, lettrage de couleur blanc sur fond rouge, "AVERTISSEMENT PRISE POUR BATEAU SEULEMENT" / Lamicoid plate with white letters on red background				3								Brady	Entrepreneur / Contractor	Entrepreneur / Contractor	
			Connecteur mâle Meltric, 150A, 250V, 2 pôles avec MALT et poignée en santoprène et couvercle / Male Meltric connector with MALT and santoprene handle and lid	63-98072 / 65-9A013-Dxx / 31-9A126			3		150		250				Meltric	Entrepreneur / Contractor	Entrepreneur / Contractor	
Îlot électrique type "B" / Service station																		
			Disjoncteur 15A, 1pôle 120 V avec dispositif de détection des fuites à la terre (DDFT) / GFCI breaker	GFRST15W			2		15		120				Hubbell	Entrepreneur / Contractor	Entrepreneur / Contractor	
			Plaque couvercle à l'épreuve des intempéries / Weatherproof cover	52CM21			3								Hubbell	Entrepreneur / Contractor	Entrepreneur / Contractor	
			Plaque couvercle à l'épreuve des intempéries jaune / Yellow weatherproof cover	52CM21			2								Hubbell	Entrepreneur / Contractor	Entrepreneur / Contractor	
			Disjoncteur 50A, 2 pôles 240 V / Breaker	BR250			1		50		240				Eaton	Entrepreneur / Contractor	Entrepreneur / Contractor	
			Prise de courant double 15A-125 V, ACNOR, 5-15R / Receptacle	52CM62			2		15		125				Hubbell	Entrepreneur / Contractor	Entrepreneur / Contractor	
			Prise de courant simple verrouillable 50A-250 V 2 pôles, ACNOR, 6-50R / Receptacle	CS6370			1		50		250				Hubbell	Entrepreneur / Contractor	Entrepreneur / Contractor	
			Plaque couvercle à l'épreuve des intempéries / Weatherproof cover	SS-723			1								Hubbell	Entrepreneur / Contractor	Entrepreneur / Contractor	
			Bloc de répartition 70A / Terminal block	ASTB85			3								Hoffman	Entrepreneur / Contractor	Entrepreneur / Contractor	
			Boîtier NEMA 4 en fibre de verre renforcé en polyester, muni de pentures non métalliques avec "latche" verrouillable en acier inoxidable, plaque de montage intérieure non métallique / Fiberglass enclosure with lockable latch in stainless steel and interior metallic plate	A24H2008GQRLP / A-24P20C	616 x 515 x 203		3								Hoffman	Entrepreneur / Contractor	Entrepreneur / Contractor	
			Plaque identification lamicoïde, lettrage de couleur blanc sur fond rouge, "AVERTISSEMENT PRISE POUR OUTILLAGE SEULEMENT (Aucune pompe bateau)" / Lamicoid plate with white letters on red backgrounc				4								Brady	Entrepreneur / Contractor	Entrepreneur / Contractor	Installer identification aussi sur îlot type B existant / Identification shall also be installed on existing service station
			Plaque identification lamicoïde, lettrage de couleur blanc sur fond rouge, "AVERTISSEMENT PRISE POUR SOUDEUSE SEULEMENT" / Lamicoid plate with white letters on red background				2								Brady	Entrepreneur / Contractor	Entrepreneur / Contractor	Installer identification aussi sur îlot type B existant / Identification shall also be installed on existing service station
			Connecteur mâle Meltric, 150A, 250V, 2 pôles avec MALT et poignée en santoprène et couvercle / Male Meltric connector with MALT and santoprene handle and lid	63-98072 / 65-9A013-Dxx / 31-9A126			1		150		250				Meltric	Entrepreneur / Contractor	Entrepreneur / Contractor	

Rev.	Item	Identification (Tag)	Description	Modèle (Model)	Dimensions (H x W x D) mm	Poids (Weight) kg	Qté. (Qty)	Unité (Unit)	Capacité (Ampacity) A	Icc Sym.RMS KA	Tension (Voltage) V	Puissance Réelle (Power) kW	Puissance (Power) kVA	No. Dessin de référence (Reference Drawing Number)	Manufacturier (Manufacturer)	Fourni par (Supplied by)	Installé par (Installed by)	Notes / Remarks
Îlot électrique type "C" / Service station																		
			Connecteur mâle Meltric, 150A, 250V, 2 pôles avec MALT et poignée en santoprène et couvercle / Male Meltric connector with MALT and santoprene handle and lid	63-98072 / 65-9A013-Dxx / 31-9A126			2		150		250				Meltric	Entrepreneur / Contractor	Entrepreneur / Contractor	
Station de transformateur de service / Service transformer																		
			Transformateur de type sec encapsulé dans l'époxyde, NEMA 3R, 37,5kVA, 600-120/240 V, 60 Hz, monophasé / Single phase transformer, epoxy insulated	CESC0037VKB6XXLD	572 x 381 x 305	232	1	ch					37,5		Delta	Entrepreneur / Contractor	Entrepreneur / Contractor	
			Transformateur de type sec encapsulé dans l'époxyde, NEMA 3R, 50kVA, 600-120/240 V, 60 Hz, monophasé / Single phase transformer, epoxy insulated	CESC0050VKB6XXLD	579 x 444 x 335	295	2	ch					50		Delta	Entrepreneur / Contractor	Entrepreneur / Contractor	
			Disjoncteur sous boitïer, NEMA 4, 60A, 600V, 2 pôles, 14 kA type FBD / Enclosed breaker	WFDB2060L	505,7 x 224,5 x 236,5	7	1	ch	60	14	600				Eaton	Entrepreneur / Contractor	Entrepreneur / Contractor	
			Disjoncteur sous boitïer, NEMA 4, 80A, 600V, 2 pôles, 14 kA type FBD / Enclosed breaker	WFDB2080L	505,7 x 224,5 x 236,5	7	2	ch	80	14	600				Eaton	Entrepreneur / Contractor	Entrepreneur / Contractor	
			Connecteur femelle Meltric, 250V, 2 pôles avec MALT et boîte métallique avec angle en nylon de 70° / Femelle Meltric connector with MALT and metalic box of 70°	63-94072-843 / 31-9A053-080-xx			6		150		250				Meltric	Entrepreneur / Contractor	Entrepreneur / Contractor	
Cabanon électrique existant / Existing electrical shed																		
			Disjoncteur 60A, 2 pôles 240 V / Breaker	BR260			2		60		240				Eaton	Entrepreneur / Contractor	Entrepreneur / Contractor	
			Épissures 3M pour câble 3C #6 AWG, TECK / Splice kit for TECK cable	5731C/AC			2								3M	Entrepreneur / Contractor	Entrepreneur / Contractor	
Éclairage / Lighting																		
		L1	Luminaire au LED classifié IP66, 240V avec poteau carré de 7315 mm de haut / Lighting fixture, IP66 classified with 7315mm pole	GLEON-AE-02-LED-E1-T4FT-P-AP ; PPSSS524HAB-1DXX			8		8		240				MCGRAW-GLEON	Entrepreneur / Contractor	Entrepreneur / Contractor	
Divers / Misc																		
			Connecteur mâle Meltric, 150A, 250V, 2 pôles avec MALT et poignée en santoprène et couvercle / Male Meltric connector with MALT and santoprene handle and lid	63-98072 / 65-9A013-Dxx / 31-9A126			6		150		250				Meltric	Entrepreneur / Contractor	Entrepreneur / Contractor	
			Connecteur femelle Meltric, 150A, 250V, 2 pôles avec MALT et poignée en santoprène et couvercle / Femelle Meltric connector with MALT and santoprene handle and lid	63-94072 / 65-9A013-Dxx / 31-9A126			6		150		250				Meltric	Entrepreneur / Contractor	Entrepreneur / Contractor	

APPENDIX C

ISSUE FOR CONSTRUCTION DRAWINGS

PROJECT NO DFO-SCH #721181

PROJECT NO WSP #161-03779-00

APPENDIX D

TYPE « C » STATION DETAIL

PROJECT NO DFO-SCH #721181

PROJECT NO WSP #161-03779-00

Détail Îlot type « C » / Station type « C » detail