



**Fisheries and Oceans
Canada**



Small Craft Harbours

Chevery – Lower North Shore

Reconstruction of Fishermen's Wharf

Project n° 721304

Specifications for tender - Civil



June 2017



Fisheries and Oceans
Canada

CHEVERY WHARF RECONSTRUCTION

SPECIFICATION

ELECTRICITY

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FOR TENDER

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APPENDICES

Environmental Monitoring Form.pdf

DRAWINGS CIVIL

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00/11	PPB16-3553-M01-01	DRAWING LITS
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ELECTRICAL

EL-001	03920-480-EL-001-00-PE-00.pdf	ÉLECTRICITY – POWER LIGHTING
EL-002	03920-480-EL-002-00-PE-00.pdf	ÉLECTRICITY – DETAILS POWER LIGHTING

Chevery wharf reconstruction

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PART 1 GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

- .1 The work covered by this contract involves the reconstruction of the Fishermen's Wharf in Chevery, on the Lower North Shore of Quebec.
- .2 The works include mainly, but are not limited to:
 - .1 Demolition and construction of concrete slab on Wharf;
 - .2 Demolition of existing wooden crib Wharf;
 - .3 Reconstruction of Wharf with crib;
 - .4 Demolition of old crib ramp;
 - .5 Reuse of man stone in existing Wharf;
 - .6 Installation of a crane on Wharf;
 - .7 Excavation of granular material and new fill ;
 - .8 Electricity and lighting of site.

1.2 WORK SEQUENCE

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

1.6 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 Remote access of site and lack of road transportation;
 - .2 Difficulty of access by marine and aerial ways;
 - .3 Access based on climatic conditions;
 - .4 Availability of sites for site construction facilities;
 - .5 Environmental constraints;
 - .6 Safety constraints.
 - .7 The neighbouring works and scheduled operation.
- .2 Contractor will make sure that all works or storage of materials does not disturb security of neighboring structures and users.
- .3 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).

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 to be reached on site are :
 - .1 Fishermen's representative : M. Alexander Dumas, (418) 787-2041, Alexander.dumas@sphbcn.ca.

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.

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 Blasting is forbidden.

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 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 No payment will be allowed for quantities exceeding indications on plans and specifications without prior acceptance by Department Representative.
- .3 The contractor shall provide costing details for the items in each unit paid as a lump sum no later than ten (10) days after the notice of offer acceptance date.
- .4 The following work is measured using the lump sum pricing method:
 - .1 Item # 1 Worksite organization:
 - This item includes all elements of Division 01 from specifications.
 - This item also includes the work indicated on drawings and specifications for which payment is not included in any another
 - .2 Item # 2 Mobilization and Demobilization :
 - This item includes all costs related to mobilization and demobilization for worksite, and for transportation of equipment, materials, machinery and any other required item.
 - .3 Item # 3.1 Demolition - Slab on ground :
 - This item includes all costs related to the demolition of the slab on ground.
 - This item includes the disposal of concrete and uncontaminated granular material in accordance with all applicable environmental rules.
 - .4 Item # 3.2 Demolition – Wooden crib Wharf:
 - This item includes all costs related to the demolition of the existing wharf built with cribs of treated wood as shown on drawings.
 - This item includes the stabilization of the backfill behind the wharf and the small concrete wall.
 - This item includes demolition of cribs, concrete slab, sheating, fenders, concrete bases included in the wharf, timber light pole, and any other items included in the wharf.
 - This item includes the excavation and disposal of foundations sediments under cribs but excludes disposal of treated wood.
 - This item includes temporary storage of man stones before their reuse.
 - .5 Item # 3.3 Demolition – Old ramp:
 - This item includes all costs related to the demolition of the old ramp as shown on drawings.
 - This item includes disposal of all non-contaminated materials of the ramp, i.e.

non-treated wood, unused ballast stones and other granular materials.

- This item includes the reuse of man stones from old ramp and their temporary storage before reuse.

.6 Item # 7 .1 Services - Electricity and Lighting:

- This item includes all electricity and lighting activities as shown on drawings and described in the specifications including, but not limited to, all connections, controls, signs, wires, poles, equipment, materials, fixtures , as well as their installation.
- This item includes the re-use of existing equipment as indicated on drawings.
- This item includes the construction of the trench as well as the fixing of the ducts in wharf, all performed according to the rules of the art.

.5 Measuring method for items with unit prices goes as follows:

.1 Item #3.4 Demolition - Disposition of Contaminated Elements:

- This item will be measured by metric ton of contaminated material generated from the demolition being disposed of in accordance with environmental regulations.
- This item includes the regulatory storage of contaminated items on worksite before its disposal and its transport to an authorized site.
- Contaminated materials may come from the crib wharf and the ramp, and may consist of treated wood or contaminated granular materials.

.2 Item #4.1 Wharf Reconstruction - Timber Cribs

- This item will be measured at the theoretical m³ of timber crib built and installed.
- This item includes costs related to the supply, transport and installation of timber as shown on the plans.
- This item includes the reuse of man stones coming from the demolition of the existing wharf and the old ramp. An approximation of 75% of man stone from existing wharf and ramp can be reused in new cribs. This percentage of stone reuse is to verify onsite by contractor, and therefore he must adapt the quantities of new man stone to import on site.
- This item includes the disposal of non-contaminated materials in wharf that cannot be reused in wharf, up to 25% of the total quantities of fill in wharf.

.3 Item #4.2 Wharf Reconstruction – New man stones :

- This item will be measured per metric ton of man stone 200-300 mm inserted in new wooden cribs.
- This item includes the costs for providing transporting and installing man stones as shown on the plans.

.4 Item # 4.3 Wharf Reconstruction - Concrete Slab :

- This item will be measured at the theoretical m³ of concrete to be inserted in the new slab on crib wharf.

- This item includes all costs related to the supply and installation of the new slab on wharf as shown on drawings, including the construction joints with the slab on ground and the over thickness from the electrical station.
- This item excludes other concrete elements, such as the winch and lamppost bases, and the security bollards.

.5 Item #4.4 Wharf Reconstruction - Anchor Blocks

- This item will be measured according to the anchor block unit built and installed as shown on drawings.
- This item includes the cost for providing and installing the anchor blocks as shown on drawings.
- This item includes all hardware required for anchor block, its foundations and geotextile required under the block.
- This item includes the excavation needed to install bloc as required, and disposal of extra material.

.6 Item #4.5 Wharf Reconstruction – Fenders and Sheathing

- This item will be measured per m² of wharf covered with fenders and sheatings.
- This item includes costs related to supply and installation of timber fenders and sheathing as shown on drawings.
- This item includes the bolts required to attach the fenders and paneling.
- This item excludes m² where there is a scale and its vertical pieces (for each ladder a width of 906 mm is excluded of payable m²).

.7 Item # 4.6 Wharf Reconstruction – Ladders

- This item will be measured per unit of ladders built and installed.
- This item includes the costs for providing and installing the ladder and its vertical timbers as shown on the plans.

.8 Item # 4.7.1 Wharf Reconstruction – Reused wheelguard

- This item will be measured per linear meters of reused and installed wheelguard.
- This item includes the costs for providing new galvanized hardware for wheelguard and the painting of wheelguard.

.9 Item # 4.7.2 Wharf Reconstruction – New wheelguard

- This item will be measured per linear meters of provided and new installed wheelguard.
- This item includes the costs for providing the wheelguard, its new galvanized hardware for wheelguard and the paint of wheelguard.

.10 Item #4.8.1 Wharf Reconstruction – Reused cleats

- This item will be measured at the unit of reused and installed cleats.
- This item includes the costs of reusing the cleats, as well as their placement as shown in the drawings.
- This item includes all new galvanized hardware required.

.11 Item #4.8.2 Wharf Reconstruction – New cleats

- This item will be measured per unit of new provided and installed cleats.
- This item includes all costs for new cleats, as well as their placement as shown in the drawings.
- This item includes all new galvanized hardware required.

.12 Item #4.9 Wharf Reconstruction - Concrete Bases

- This item will be measured per m³ of theoretical concrete planned for each base once the bases are in place.
- This item includes the costs of providing and installing concrete bases as shown on the plans, including reinforcements, geotextile and foundations where required.
- This item is divided as follows:
 - Lamp base
 - Winch base

.13 Item # 5 Slab Reconstruction on Soil

- This item will be measured at the theoretical slab of floor slab constructed as shown on plans.
- This item includes all costs related to the supply and installation of the new floor slab, including the control gaskets, MG-56 and MG-20 foundations required.

.14 Item # 6 Ramp Repairs

- This item shall be measured and paid for per linear meter of wheelguard repaired from the ramp as shown on the drawings.
- This item includes all costs related to the repair of the wheel guard, such as surface preparation, formwork, materials, hardware, expansion joints, anchors, grout, etc.

.15 Item #7.2 Services – Security Bollards

- This item will be measured and paid as unit set up on the wharf as shown on the plans.
- This item includes all costs related to the supply and installation of the bollards, including steel, concrete, anchors, drilling, etc.

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 (GANTT) 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 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.

1.6 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.

1.7 PROJECT SCHEDULE REPORTING

- .1 Update Project Schedule twice per month reflecting activity changes and completions, as well as activities in progress.
- .2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

1.8 PROJECT MEETINGS

- .1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.
- .2 Weather related delays 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 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:
<input type="checkbox"/> As is <input type="checkbox"/> Equivalent <input type="checkbox"/> Substitution	<input type="checkbox"/> Verification <input type="checkbox"/> Information <input type="checkbox"/> Coordination <input type="checkbox"/> Other:

REVISION	DATE OF ISSUE

NOTE:

VERIFICATION OF COMPLIANCE	
<div style="border: 1px solid black; padding: 10px; margin-bottom: 10px;"> <p><u>Nature and scope of the verification</u></p> <p><input type="checkbox"/> Compliance with plans and specifications</p> <p><input type="checkbox"/> Other:</p> </div> <p>This verification does not constitute a complete and detailed verification of the design.</p> <p><input type="checkbox"/> No correction noted</p> <p><input type="checkbox"/> the indicated corrections</p> <p><input type="checkbox"/> Correct and resubmit</p> <p><input type="checkbox"/> Not accepted</p> <p>Signature <input type="checkbox"/> Engineer <input type="checkbox"/> Other Date</p>	
<hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/> <p>Name</p>	<hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/> <p>OIQ member No</p>
<p>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</p>	

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 26 05 00 – Common Work Result

1.2 ADMINISTRATIVE

- .1 Submit to the Departmental Representative a 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 one 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.

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 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 CNESST 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 CNESST 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, among other things, 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 certificate issued just before the delivery of the equipment to the worksite.
- For all winch installations, the Contractor must transmit to the Departmental Representative the manufacturer's recommended installation process, or an installation process signed and sealed by an engineer. The installation process must take into account the maximum admissible 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 temporarily block the public roads, in respect of the preceding paragraph or for any other reason concerning safety 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 responsible 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, articulated 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

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 Canadian Environmental Assessment Act, 2012 (S.C. 2012, c. 19, s. 52)
- .3 *Regulation respecting hazardous materials* (Q-2, r. 32)
- .4 *Regulation respecting solid waste* (Q-2, r. 13)
- .5 *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)
- .6 *Act respecting the conservation and development of wildlife* (CQLR, c. 61.1)
- .7 *Regulation respecting wildlife habitats* (c. 61.1, r. 18)
- .8 *Fisheries Act* (R.S.C., 1985, c. F-14)
- .9 Lignes directrices relatives à la gestion du bois traité [treated wood management guidelines] (MDDELCC, October 2011)
- .10 Politique de protection des sols et réhabilitation des terrains contaminés [soil protection and contaminated land recovery policy] (MDDELCC, 2001)
- .11 Critères de qualité de l'eau de surface [surface water quality criteria] (MDDELCC, 2013)
- .12 Rapport d'évaluation des effets environnementaux – Reconstruction du quai de Chevery – Février 2017, Pêches et Océans Canada – Ports pour petits bateaux.

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 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 reconstruction of the wharf and demolition of ramp.
 - .1 The Contractor shall develop its work schedule and its completion methods to in order to respect the environmental restriction periods. Therefore no work can be carried out between May 16th and June 30th to protect existing species in Lower North shore, and no works can be carried out during nighttime between July 1st and October 31th. . In addition, the work must be done as possible outside the nesting period of avian wildlife, between the mi-25 May and July 21.
 - .2 If possible, work in intertidal zone must be carried out at low tide or more or less two hours from low tide to minimize the resuspension of sediments.
 - .3 The materials imported on the site will be clean upon arrival on site and be stored under polyethylene tarps to avoid their suspension on windy day
 - .4 Do not approach a seabird or aquatic bird colony during breeding season; keep within more than 300 m of these colonies.
 - .5 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.
 - .6 Limit the work to the suitable tidal cycle.
 - .7 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.
 - .8 .8 when a cetacean or a leatherback turtle is observed within 200 m of the area of the work in an aquatic zone, it is recommended to stop work and wait that the individual has moved away at more than 200 m.
 - .9 Suspend works if an individual from one of the special status species is observed within a radius of 200 m around the entire work area. Works could resume when the individual will have moved away more than 200 m or after a period of 30 minutes without observation.
- .1 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 Management of creosote-treated wood from the Fishermen's wharf and the ramp.
 - .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;
 - .2 The creosoted wood must be 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.
- .3 Management of ACC-treated wood.

- .1 Require timber not from old growth forests.
 - .2 Observe manufacturer's recommendations / instructions.
 - .3 Require written assurance from supplier that treated wood has been produced in accordance with best management practices from the Industry (BMP). Ensure, in particular, that it meets the appropriate retention criteria for wood that will be in contact with the marine environment.
 - .4 Require CCA-treated lumber to have a chromotropic acid test to ensure product is properly bonded.
 - .5 Require treated wood to be delivered under tarps.
 - .6 Inspect treated timber at construction to verify surface deposits and dryness. Do not use improper equipment.
 - .7 Do not brush, clean or cut treated wood over water or near sensitive ecological areas.
 - .8 Promote the cutting and prefabrication of timber parts before performing the pressure treatment.
 - .9 Consider the incorporation of a water repellent when treating wood with a water-based agent.
 - .10 At no time should toxic products be applied in situ or when the wood is directly in contact with the aquatic environment or overhangs it.
 - .11 Review with supplier the possibility of an industrial submersion period for 24 or 48 hours for CCA-treated timber to eliminate surplus and avoid large releases that occur when placed in the water.
 - .12 Store treated wood on a waterproof membrane and cover with a protective tarp to protect it from weather when not in use. Prioritize soil surfaces with limited permeability, such as clay and compacted soil, asphalt or concrete away from surface water.
- .4 Surface water management
- .1 The Contractor shall not store machinery, 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 the river.

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 in accordance with the local environmental characteristics. This site shall be : at least 30 m from a watercourse or other water body, at least 3 m from any drainage pit, over the elevation of the high tide, and be relatively plane (maximum slope of 10%).
- .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.

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).
- .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 Machinery and 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 Stop engines from vehicles and equipment when not in used.
- .3 Immediately repair any equipment or machine that produces excessive exhaust emissions.
- .4 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. Suspend work requiring the use of particularly noisy craft on Sundays, public holidays as well as in the evening and night between 19:00 and 07:00.
 - .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 (1-800-363-4735), 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 26 05 00 – Common Work Results for Electrical
- .12 Section 31 53 16 – Structural Timber
- .13 Section 35 20 23 – Dredging
- .14 Section 35 20 23 A – Sediment Management
- .15 Section 35 31 23 – Rubblemound Breakwater
- .16 Section 35 31 24 – Production of Stone
- .17 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 section 26 05 00 – Common Work Results for Electrical.
- .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).
- .5 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 C₁₀-C₅₀, 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.
 - .1 Leave work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 – Cleaning.
- .3 Waste Management: separate waste materials for reuse and recycling 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 33 00 - Submittal Procedures
- .2 Section 01 35 29.06 – Health and safety requirements
- .3 Section 01 35 43 – Environmental procedures
- .4 Section 01 56 00 - Temporary Barriers and Enclosures
- .5 Section 01 74 21 - Construction/Demolition Waste Management and Disposal

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 results of the most recent bathymetric survey are included in drawings. The information is provided for tender only. Information can differ from site conditions during Work and it is the Contractor's responsibility to verify the validity of initial conditions.
- .3 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.
- .4 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.
- .5 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.
- .6 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.
- .7 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 piling 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 Information concerning the existing structures given on drawings is partial and had to be supplemented on the site.
- .3 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.
- .4 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.

- .5 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

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
- .4 Section 03 30 51 – Concrete for Wharf Deck
- .5 Section 03 41 00 – Precast Structural 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. 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 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.
- .5 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.
 - .5 Empty containers must be sealed and stored in a place safe and out of the reach of children, for their elimination

PART 2 PRODUCTS

2.1 MATERIALS/EQUIPMENT

- .1 Formwork materials
 - .1 For concrete presenting no special architectural features, use formwork materials to CSA O121, CSA-O86.1, CSA O437, or CSA O153. 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 Formwork shall comply to CAN3-A23.1-M77. Observe maximum tolerances for finished concrete structures as specified in ACI Standard 347 "Recommended Practice for Concrete Formwork".
 - .4 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 approved 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.
- .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. 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 Install a liner on the inside of the formwork for the following surfaces :
 - 1. The outer face of the main beams, secondary beams and the vertical edge of the slabs.
 - 2. The underside of main beams and bridge decks, if visible.
 - 3. Exposed faces of abutments / abutments, return walls, pylons and pillars. Do not shift the seams of the liner panels. Align the joints to obtain uniform patterns.
 - 4. Fasten lining to formwork as far as possible to prevent wrinkling.
 - 5. Extend lining on edges of shuttering panels.

- 6. Make sure liner is new and has not been used.
- 7. Make sure liner is dry and free of oil when placing concrete.
- 8. It is prohibited to apply a release agent when a draining liner is used.
- 9. If concrete surfaces are to be cleaned after removal of formwork, use a simple jet of pressurized water so that the smooth finish of the concrete does not deteriorate.
- 10. The cost of a textile liner is included in the price of concrete for the corresponding part of the work.
- .14 Clean formwork in accordance with CSA-A23.1/A23.2, before placing concrete.
- .15 When slip forming is used, submit details as per Article 1.4 of section 01 33 00 –Submittal Procedures.
- .16 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 BAR TEMPERATURE

- .1 At the time of the casting, the temperature of steel bars in the forms should not be lower than 5

degrees C.

3.5 CLEANING

- .1 Progress Cleaning: carry out cleaning work.
- .2 Leave Work area clean at end of each day.
- .3 Final Cleaning: upon completion, remove surplus materials, rubbish, tools and equipment from Work site.
- .4 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
- .6 Section 03 41 00 – Precast Structural Concrete

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, if requested, 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 ASTM D 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 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
5. Section 03 30 51 –Concrete for Wharf Deck
6. Section 05 50 00 – Metal Fabrications

1.2 REFERENCES

1. Unless otherwise indicated, refer to the last publication and the amendments to the following standards, prevail on the date of entry of the contract.
 2. American Concrete Institute (ACI)
 1. ACI 315R-04, Manual of Engineering and Placing Drawings for Reinforced Concrete Structure
 2. 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 / A23.2-F14, Concrete: Components and workmanship / Test methods and standardized practices for concrete.
 2. CAN / CSA-A23.3-F14, Calculation of Concrete Structures.
 3. CSA-G30.18-F09 (2014), Carbon steel rod for concrete reinforcement.
 4. CSA-G40.20 / G40.21-F13, General Requirements for Rolled or Welded Structural Steel / Structural Steel.
 5. CAN / CSA-G164-FM92 (C2003), Hot dip galvanizing irregularly shaped objects.
 6. CSA W186-FM1990 (C2012), Rebar Welding in Reinforced Concrete Structures.
 7. CAN / CSA G30.3-M-1983 (C1998) Cold-drawn steel wire for reinforcement of concrete.
 8. CAN-A23.4, Precast concrete: components and work.
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9. CSA-A251 Qualification Requirements for Manufacturers of Architectural Concrete and Prefabricated Structural Concrete.
10. CAN / CSA-G30.18, Tin steel bars for reinforcement of concrete.
5. Reinforcement Steel Institute of Canada (RSIC / IAAC)
 1. IAAC-C2006, Reinforcement Steel, Recommended Standards Manual.

1.3 PERFORMANCE REQUIREMENTS

1. Tolerances of precast elements shall comply with requirements set forth in CSA-A23.4, section 10.
2. Variance between actual length and nominal length of precast elements shall not exceed 5 mm upwards or downwards.
3. Variance between actual and nominal transversal dimensions of precast elements shall not exceed 5 mm upwards or downwards.
4. Variance relative to straight line shall not exceed 1 mm per linear metre.

1.4 SHOP DRAWINGS

1. Submit shop drawings as required in section 01 33 00 (Submittal Procedures).
2. Each shop drawing submitted shall bear the seal and signature of a qualified engineer member of OIQ or holding a licence allowing him or her to practice in Canada, in the Province of Québec.

1.5 QUALIFICATION

1. Fabricate precast concrete elements by CSA certified manufacturing plant in appropriate categories according to CSA-A251.
2. Precast concrete manufacturer to be certified in accordance with CSA's certification procedures for precast concrete plants prior to submitting tender and to specifically verify as part of tender that plant is currently certified in appropriate categories, Structural.
3. Only precast elements fabricated in such certified plants to be acceptable to Departmental Representative and plant certification to be maintained for duration of fabrication, erection until warranty expires.
4. Welding companies shall be certified to CSA-W47.1.

1.6 WASTE MANAGEMENT AND DISPOSAL

1. Separate waste materials for reuse and recycling in accordance with prescriptions in this specification.
2. Take appropriate measures to prevent contamination of potable water sources by plasticizers, water reducers and air entrainment agents added to concrete. Where necessary, collect or solidify liquid waste with inert non-combustible material and take all required safety measures. Dispose of such waste to applicable requirements in local, provincial and federal rules and regulations.

PART 2 PRODUCTS

2.1 MATERIALS

- .1 Concrete materials: to requirements of section 03 30 00 (Cast-in-place concrete).
- .2 Steel reinforcement: to requirements of section 03 20 00 (Concrete reinforcing).
- .3 Concrete-encased steel plates: steel plates to CAN/CSA G40.20 and CAN/CSA G40.21. Plates shall be hot-dip galvanized to requirements of section 05 50 00 (Metal fabrications).

2.2 PROPORTIONING

1. Prepare concrete for the anchor concrete block in precast concrete to CSA-A23.1 (Table 11, Alternative I), in order to yield the following mix:
 - .1 Cement: use GUb-SF type cement.
 - .2 28-day minimum strength: 35 MPa.
 - .3 Minimum cement content: 375 kg/m³ of concrete.
 - .4 Exposure class: C-1.
 - .5 Maximum water-cement ratio: 0.4.
 - .6 Minimum size or coarse aggregate: 20 mm to CSA-A23.1.
 - .7 Slump: 50 to 100 mm.
 - .8 Air content: 5 to 8%.
 - .9 Admixtures: quantities as recommended by manufacturer.

2.3 PRECAST ELEMENTS

1. Fabricate precast elements to CSA-A23.4 and CSA-A251.
2. Each precast element shall bear the date of pour, and the matching identification mark identified on the shop drawings and used to locate the element.
3. Hardware items adequate to handle the precast elements, shall be provided and installed.

2.4 QUALITY CONTROL AT THE SOURCE

1. Provide Departmental Representative with certified copies of quality control tests related to this project as specified in CAN3-A23.4 and CSA-A251.
 2. Provide records from in-house quality control programme based upon plant certification requirements to Departmental Representative for inspection and review.
 3. Upon request, provide Departmental Representative with copy of mill test report of reinforcing steel supplied, showing physical and chemical analysis.
 4. Precast plants should keep complete records of supply source of concrete material, and provide to Departmental Representative for review upon request.
-

PART 3 EXECUTION

3.1 PLACEMENT

1. Handling and storage: ship, handle and store precast elements to CSA-A23.4 requirements.
2. Installation: install precast elements as shown on the drawings. Exact location of the block will depend on actual configuration of floating docks determined on site and approved by Department Representative.

3.2 CLEANING

1. Cleaning during work: perform cleaning work.
 - .1 Keep the area clean at the end of each working day.
2. Final cleaning: after completion of work, remove surplus materials / materials, waste, tools and equipment from site.
3. Waste management: sort waste for reuse / reuse or recycling

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 03 30 00 – Cast-In-Place Concrete
- .2 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 or 350W.
- .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 Existing cleats will receive a paint system.
- .3 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
- .4 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 on 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 Standard Test 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 SSP 6.

.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 to 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 hygroreactive (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:

$$100 + D$$

$$H = T \times \left(\frac{100 + D}{B} \right) \times V$$

- 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
- 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 be 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 hygroreactive 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

Partie 1 GENERAL

1.1 RELATED SECTIONS

- .1 Section 06 05 73 – Wood Treatment
- .2 Section 05 50 00 – Metal Fabrications

1.2 WASTE MANAGEMENT AND DISPOSAL

- .1 Sort and recycle waste in compliance with section 01 74 21 – Construction/demolition waste management and disposal.

Partie 2 PRODUCTS

2.1 MATERIALS

- .1 Steel
 - .1 All mechanical bolts, lag screw, drift bolt and nails will be of medium construction steel, in compliance with standard ASTM-A307.
 - .2 All steel parts must be galvanized in compliance with standards ASTM A123/123M, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Production.
 - .1 Galvanize the various parts in accordance with the following rates:
 - .1 Bolts and nuts: 460 g/m2;
 - .2 Section, plates and rods: 705 g/m2
 - .3 Threads will meet the specifications of standard ANS/B1-1, class 2A.
 - .4 Washers will be made of grey cast iron or steel.
 - .5 Mechanical bolts, lag screw and drift bolt will have forged heads.
 - .6 The length of bolts specified does not include the head; the length of the bolt's threads is 100 mm.
 - .7 The spiral galvanized nails will be 250 mm long.
 - .8 All drift bolts will be properly worked down and will have 9 mm countersunk heads, larger than the diameter used.
 - .9 All drift bolts holes will be drilled to a diameter of 2 mm smaller than the diameter of the bolts used and 75 mm shorter than their length;
 - .10 The lag bolts will be threaded and have hexagonal heads;
 - .11 The lag bolt holes must conform to the following:
 - .1 The pilot hole for the bolt core must be the same diameter as the bolt core and the same height as the bolt core 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 core for the length equal to the threaded portion of the bolt.
- .3 The threaded portion of the screw must be inserted into the pilot hole by turning the screw 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 screw or in the pilot hole in order to facilitate insertion and prevent damage to the screw.
- .12 In the wood structure, each mechanical bolt will be equipped with two (2) flat washers with a diameter equal to four (4) times the bolt diameter. The heads and nuts of the bolts will also lie evenly over the washers. They will be inserted flush with the wood pieces on all outside faces of the crib structures and wherever this procedure is specified or required, as directed by the Departmental Representative. The carriage bolt holes will be drilled to the same diameter as the bolts used.
- .13 Generally speaking, the length of the nuts and bolts in the wood structure is determined as follows, except where otherwise specified:
 - .1 Drift bolt and lag screw: total width of parts to secure less 50 mm.
 - .2 Mechanical bolt with two (2) non-countersunk washers: total width of parts to secure less 100 mm.
 - .3 Mechanical bolt with two (2) washers, only one of which is countersunk: total width of parts to secure plus 50 mm.
 - .4 Mechanical bolt with two (2) countersunk washers: total width of parts to secure.
 - .5 Common nails and spiral nails: width of thinner part to be secured multiplied by two and a half (2.5).

.2 Wood

- .1 Wood to be sustainable forest management in compliance with CSA_ISO 41001 or FSC.
- .2 All wood used in the construction of the crib will be treated with pressurized CCA in accordance with CAN/CSA-O80-M, except for ballast floor. Retention to be 24 kg/m³ as required for marine application in accordance with requirements.
- .3 All wood varieties will be in compliance with the requirements of the NLGA (National Lumber Grades Association) entitled "Standard Grading Rules for Canadian Lumber."
- .4 The coastal Douglas fir tree and the Pacific Coast hemlock will meet the requirements of the British Columbia Lumber Manufacturer's Association entitled "Standard Specifications for Construction Grade."
- .5 The spruce, jack pine and eastern hemlock will 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 the balsam fir which will not be accepted although it is mentioned in rule No. 1.

- .6 Square timber and crib wood (narrow side: greater than or equal to 127 mm): the wood introduced into the construction will be coastal Douglas fir or Pacific Coast hemlock, eastern hemlock, jack pine, red pine or tamarack. All wood used will be of the varieties mentioned and of No. 2 structure quality or better in compliance with paragraph 130.C of the NLGA standard for beams and stringers and 131.C for poles and square timber. However, no altered wood (soft rot) will be accepted.
- .7 Planks and dim wood (thickness greater or equal to 51 mm and smaller than 127 mm, width greater or equal to 127 mm): all wood used will be from the S-P-F variety group or eastern hemlock, red pine or tamarack. No. 2 structure quality, or better, in compliance with paragraph 124.C of the NLGA standard.
- .8 The wood will be double end trimmed at a right angle before treatment following standard NLGA 748-B.
- .9 Spruce and balsam fir will not be accepted when treated wood is specified.
- .10 All material treated under pressure requiring cutting, in order to be adjusted, will be coated, while dry, with three (3) layers of preservative as is required in standard CAN/CSA-080-M. All holes in timber pieces will be treated that way

.3 Ballast stone

- .1 Stone measuring 300 to 500 mm in diameter.
- .2 The smallest size stones must not be less than 250 mm.
- .3 The stone used must be quarried from hard and durable stone. The use of shale or slate and round stones will not be accepted in any part of the structure. The stones used must be free of planes of weakness such as stratification, bedding, cracks and argillite beds.
- .4 The stone must have a minimum density of 2,650 kg per cubic meter, show an absorption rate of less than 0.5% (ASTM-C127) and provide less than 1.5% loss in magnesium sulfate durability tests after 5 cycles (ASTM-C88). Same criteria apply to 150-25 mm stone.
- .5 The ballast stone must be evenly distributed between the minimum and maximum values.
- .6 It is the sole responsibility of the Contractor to ensure the availability of usable sources of supply and the quantity and sizes of stone that can be obtained.

Partie 3 EXECUTION

3.1 BEST MANAGEMENT PRACTICES FOR THE USE OF TREATED WOOD IN AQUATIC

- .1 The construction must comply with the following document: Best Management Practices for the use of treated wood in aquatic and other sensitive environments.
- .2 The Contractor shall make every effort to adhere to good practices. Such as:
 - .7 Wood must be protected by tarps during transport and until its use.
 - .8 Wood must be handled carefully to avoid damage and exposure of sections of non-impregnated wood. Damaged sections must be treated with an approved product.
 - .9 Store the material far from any waterway before use. Be sure the material is stored on well-drained land and not directly on debris or vegetation.
 - .10 The construction of crib structures must be carried out far enough from any waterway or other sensitive areas to avoid contamination that could be caused by debris or sawdust.
 - .11 Debris and sawdust must be recovered and disposed of according to the regulations in effect for such material. If these materials are temporarily stored on-site, they must be stored between tarps or in a waterproof container.
 - .12 If the wood is treated with an oil-based preservative, temporarily set up a boom and absorbent material to contain the film.

1.2 WOOD CRIB

- .1 Build 254 mm x 254 mm wood cribs, as specified on the plans.
- .2 These cribs will be built on site so that faces, stringers, bolsters etc, are installed horizontally. They will be built in compliance with the plan and will have the specified dimensions.
- .3 These cribs will be entirely filled up to the internal face of the joists with ballast stone.
- .4 If, after immersion, cages are unaligned, the Contractor will have to remove ballast stone, at his own expense until the cages float and will have to replace them at the proper locations.
- .5 The Contractor will have to notify the department representative, fifteen (15) days before the probable immersion date of the cages and these will not be immersed before the department representative has given written approval.
- .6 Preparation of foundation:
 - .1 Prior to crib's installation, the Contractor will have to conduct a survey of the zone where the crib will be placed.

- .2 The Contractor will have to adapt the sea bottom to the elevations indicated on plans with dredging when required.
- .3 The Contractor will have to add 25 mm clean crushed stone in order to respect the levels required.
- .4 If massive rock is encountered at the crib site, it will be cleaned and bottom parts of the cribs will be adjusted to the bedrock, while respecting the maximal height of clean stone. This same method will be used if a section of the sea floor were to be of an inferior level due to erosion during cribwork.
- .7 Bottom pieces:
 - .1 The bottom parts include the lower layers of the crib. They will have 254 mm of squaring and be placed fore and aft or crosswise, as required, to support cribs.
 - .2 Crosswise bottom parts will be of one length.
 - .3 They will be secured to each piece of wood they cross, as specified in the plans, and horizontal.
 - .4 The bottom parts will be secured to each vertical pole they cross using a machine bolt, 25 mm in diameter of the appropriate length.
 - .5 Bottom pieces placed longitudinally to be not less than 7 600 mm in length and will be placed horizontally.
 - .6 Bottom parts placed fore and aft will be butt jointed at mid-distance between the crosswise bottom parts on a 1 200 mm long block placed above or below and anchored with machine bolts 25 mm in diameter and of the appropriate lengths.
- .8 Ballast platform:
 - .1 The ballast platform will be made up of 200 to 250 mm diameter logs, placed, head to foot to bottom parts. They will be of required length and their joint will be done on a bottom part, as specified in the plans. An additional longitudinal is required as shown on plans.
 - .2 The logs will be placed on the second layer of the bottom parts. Each log extremity will be anchored to bottom parts using 25 mm diameter drift bolt of appropriate length as show on plans.
- .9 Stringers and cross-tie
 - .1 Stringers and cross-tie will be made up of 254 mm squaring pieces, as specified on the plan. Cross-tie will be placed on one horizontal length, while stringers with length to be not less than 7 600 mm.
 - .2 These pieces will be secured to each crossing with a bolster or a facing timber using a 25 mm diameter drift bolt of appropriate length. They will also be secured to each crossing with a vertical pole using a machine bolt 25 mm in diameter of the appropriate length.
- .10 Vertical poles

- .1 Vertical poles will be made up of wood pieces with 254 mm squaring, situated as specified on the plans. They will be of one length going from below the bottom parts up to the upper face of the wood joists.
- .2 Poles will be secured to each intersection with a bottom part, cross-tie, ledger, wall, crown, using 25 mm diameter machine bolts of the appropriate length.
- .11 Stringers
 - .1 Two levels of 254 mm squaring wood stringers will be installed in crib.
 - .2 Stringers will be placed as specified on the plans. They will be secured to each cross-tie using a 25 mm diameter drift bolt of the appropriate length.
 - .3 Stringers to be not less than 7 600 mm in length.

1.3 LADDERS

- .1 Ladders will be placed and solidly secured to the pier, as specified on the plans.
- .2 They will be made with 2 L 152x 89 x 12.7 mm, 25 mm in diameter and 700 mm long rungs, placed 300 mm c/c. Open space behind rungs must be at least 150 mm. All steel parts to be hot dip galvanised.
- .3 Each L 152x 89 x 12.7 mm will be fixed to wall parts using 19 mm diameter lag screw of the appropriate length. At the top of the ladder, a 25 mm diameter handhold will be recessed into the wheel-guard. This handhold will have a total length of 700 mm. Its extremities will be curved and recessed into the wheel-guard. All steel parts to be hot dip galvanised.

1.4 WOODEN WHEEL-GUARDS

- .1 A wooden 254 mm x 254 mm wheel guard will be constructed in compliance with plans.
- .2 The wheel guard will be secured to blocks and concrete slabs using 24 mm diameter threaded bars of appropriate length and chemical anchor.
- .3 The top of wheel guards will be level, of the proper elevation and their upper rims will have a 25 mm bevel.
- .4 The wheel guard will rest on 75 mm x 254 mm x 600 mm long blocks placed at every 1 500 mm on center.
- .5 Wooden pieces to be not less than 6 000 mm in length

1.5 SHEATHING AND FENDERS

- .1 Wood sheathing
 - .1 100 x 203 mm wood sheathing pieces will be installed in specified locations as shown on plans.

- .2 Pieces will be of one length as indicated on plans.
 - .3 The wood sheathing will be installed in the lower part of the crib structures, as shown in the plans.
 - .4 Each piece will be secured to concrete slab using mechanical anchor and to wall parts using heat galvanized lag screws, as specified on plans.
- .2 Wood fenders
- .1 203 x 203 mm wood sheathing pieces will be installed in specified locations as shown on plans.
 - .2 Pieces will be of one length starting as indicated on plans.
 - .3 The wood sheathing will be installed in the upper part of the crib structures.
 - .4 The lower part will be bevelled on 150 mm.
 - .5 Each piece will be secured to crowning piece and to crib parts using heat galvanized lag screws, as specified on plans.

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 06 03 00 – 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 AWP A M2 and with the modifications listed in the CSA O80 series under Supplementary Requirements to AWP A M2.

- .2 Each piece of treated plywood or timber to be used in wood foundations must have a certification stamp in compliance with CSA O322.
- .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 O80 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 O80.

3.2 PRESERVATION TREATMENT

- .1 Treat materials in compliance with the requirements of the CSA O80 series for use in a marine environment. Use a water-soluble CCA-based preservative to obtain a retention rate of 24 kg/m³.
- .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 AWP A M4 and the changes listed in the CSA O80 series under the Supplementary Requirement to AWP A 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

2.1 MATERIALS

- .1 The terme “sheathing” refers to fenders as well.
- .2 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.
- .3 Lag screw: made of galvanized steel, type and size appropriate for the application, in compliance with standard ASTM A-307.

PART 3 EXECUTION

3.1 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

1. GENERAL

1.1 REFERENCES

- .1 Canadian Standards Association (CSA International)
 - .1 CSA C22.1, last edition - Canadian Electrical Code, Part 1, Safety Standard for Electrical Installations.
 - .2 CSA C22.2 No. 0-FM92.
 - .3 CAN/CSA-C22.3 No. 1, last edition - Overhead Systems.
 - .4 CAN3-C235-83(R2000), Preferred Voltage Levels for AC Systems, 0 to 50,000 V.
- .2 Electrical and Electronic Manufacturer's Association of Canada (EEMAC)
 - .1 EEMAC 2Y-1-1958, Light Gray Colour for Indoor Switch Gear.
- .3 Institute of Electrical and Electronics (IEEE)/National Electrical Safety Code Product Line (NESC)
 - .1 IEEE SP1122-2000, The Authoritative Dictionary of IEEE Standards Terms, 7th Edition.

1.2 DEFINITIONS

- .1 Electrical and electronic terms: unless otherwise specified or indicated, terms used in these specifications, and on drawings, are those defined by IEEE SP1122.

1.3 DESIGN REQUIREMENTS

- .1 Operating voltages: to CAN3-C235.
- .2 Motors, electric heating, control and distribution devices and equipment to operate satisfactorily at 60 Hz within normal operating limits established by above standard.
 - .1 Equipment to operate in extreme operating conditions established in above standard without damage to equipment.
- .3 Language operating requirements: provide identification nameplates for control items in English and French.
- .4 Use one nameplate for both languages.

1.4 SUBMITTALS

- .1 Submittals: in accordance with administrative clauses.
- .2 Shop drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Quebec, Canada.

- .2 Submit wiring diagrams and installation details of equipment indicating proposed location, layout and arrangement, control panels, accessories, piping, ductwork, and other items that must be shown to ensure co-ordinated installation.
- .3 Identify on wiring diagrams circuit terminals and indicate internal wiring for each item of equipment and interconnection between each item of equipment.
- .4 Indicate on drawings clearances for operation, maintenance, and replacement of operating equipment devices.
- .5 If changes are required, notify Department's Representative of these changes before they are made.
- .3 Quality Control: in accordance with administrative clauses.
 - .1 Provide CSA certified equipment and material.
 - .2 Submit test results of installed electrical systems and instrumentation.
 - .3 Permits and fees: in accordance with General Conditions of contract.
 - .4 Submit, upon completion of Work, load balance report as described in PART 4 - LOAD BALANCE.
 - .5 Submit certificate of acceptance from authority having jurisdiction upon completion of Work to Department's Representative.
- .4 Manufacturer's Field Reports: submit to Department's Representative manufacturer's written report, within seven (7) days of review, verifying compliance of Work, as described in PART 4 - FIELD QUALITY CONTROL.

1.5 QUALITY ASSURANCE

- .1 Quality Assurance: in accordance with administrative clauses.
- .2 Qualifications: electrical Work to be carried out by qualified and licensed electricians or apprentices.
- .3 Site Meetings:
 - .1 In accordance with administrative clauses.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Material Delivery Schedule: provide Department's Representative with schedule within 2 weeks after award of Contract.
- .2 Construction/Demolition Waste Management and Disposal: separate waste materials for reuse and recycling in accordance with administrative clauses.

1.7 SYSTEM STARTUP

- .1 Instruct operating personnel in operation, care and maintenance of systems, system equipment and components.

- .2 Provide these services for such period, and for as many visits as necessary to put equipment in operation, and ensure that operating personnel are conversant with aspects of its care and operation.

1.8 OPERATING INSTRUCTIONS

- .1 Provide for each system and principal item of equipment as specified in technical sections for use by operation and maintenance personnel.
- .2 Operating instructions to include following:
 - .1 Wiring diagrams, control diagrams, and control sequence for each principal system and item of equipment.
 - .2 Start up, proper adjustment, operating, lubrication, and shutdown procedures.
 - .3 Safety precautions.
 - .4 Procedures to be followed in event of equipment failure.
 - .5 Other items of instruction as recommended by manufacturer of each system or item of equipment.
- .3 Print or engrave operating instructions and frame under glass or in approved laminated plastic.
- .4 Post instructions where directed.
- .5 For operating instructions exposed to weather, provide weather-resistant materials or weatherproof enclosures.
- .6 Ensure operating instructions will not fade when exposed to sunlight and are secured to prevent easy removal or peeling.

2. SCOPE OF WORK

2.1 INCLUDED WORKS

- .1 Provide, install and connect a new NEMA 4X panel including 120-240V distribution panel, one 120V 30A (GFCI) outlet and two 120V 15A (GFCI) outlet;
- .2 Add a 240V 100A breaker in the distribution panel at wharf entry;
- .3 Installation of cables in conduit in trench;
- .4 Provide, install and connect a ground cable as on drawings;
- .5 Installation of teck cables under the wharf;
- .6 Connect the new 1.5 tons 240V hoist;
- .7 Hoist certification;
- .8 Provide and install a new galvanised steel post;
- .9 Remove two lights and its cable on the existing post at wharf entry;

- .10 Install and connect the two lights on the new post;
- .11 Provide, install and connect a new photocell.

2.2 EXCLUDED WORKS

- .1 Supply of the two lights;
- .2 Concrete base for lighting post;
- .3 Supply and installation of the hoist.

3. PRODUCTS

3.1 MATERIALS AND EQUIPMENT

- .1 Material and equipment to be CSA certified.
- .2 Factory assemble control panels and component assemblies.

3.2 WIRING TERMINATIONS

- .1 Ensure lugs, terminals, screws used for termination of wiring are suitable for either copper or aluminum conductors.

3.3 EQUIPMENT IDENTIFICATION

- .1 Identify electrical equipment with nameplates as follows:
 - .1 Nameplates: lamicoid 3mm thick plastic engraving sheet, matt white finish face, black white core, lettering accurately aligned and engraved into core.
 - .2 Labels: embossed plastic labels with 6mm high letters unless specified otherwise.
 - .3 Wording on nameplates to be approved by Department's Representative prior to manufacture.
 - .4 Allow for minimum of twenty-five (25) letters per nameplate.
 - .5 Nameplates for terminal cabinets and junction boxes to indicate system and/or voltage characteristics.

3.4 WIRING IDENTIFICATION

- .1 Identify wiring with permanent indelible identifying markings, coloured plastic tapes, on both ends of phase conductors of feeders and branch circuit wiring.
- .2 Colour coding: to CSA C22.1.

4. EXECUTION

4.1 INSTALLATION

- .1 Do complete installation in accordance with standard CSA C22.1.
- .2 Do complete installation in accordance with drawing 3920-480-EL-001-00-PE-00.
- .3 Do underground systems in accordance with CSA C22.3 No.1 except where specified otherwise.

4.2 NAMEPLATES AND LABELS

- .1 Ensure manufacturer's nameplates, CSA labels and identification nameplates are visible and legible after equipment is installed.

4.3 HOIST AND TROLLEY CERTIFICATION

- .1 Perform certification on the hoist and the manual trolley by an authorized technician.
- .2 Do complete inspection and testing in accordance with standard CSA B167-16.
- .3 Provide a certification report the the Department's Representative.

4.4 FIELD QUALITY CONTROL

- .1 Load Balance:
 - .1 Measure phase current to panelboards with normal loads (lighting) operating at time of acceptance; adjust branch circuit connections as required to obtain best balance of current between phases and record changes.
 - .2 Measure phase voltages at loads and adjust transformer taps to within 3% of rated voltage of equipment.
 - .3 Provide upon completion of work, load balance report as directed in PART 1 - SUBMITTALS: phase and neutral currents on panelboards, dry-core transformers and motor control centres, operating under normal load, as well as hour and date on which each load was measured, and voltage at time of test.
- .2 Conduct following tests :
 - .1 Power distribution system including phasing, voltage, grounding and load balancing.
 - .2 Circuits originating from branch distribution panels.
 - .3 Lighting and it's control.
 - .4 Hoist and it's control.
 - .5 Insulation resistance testing:
 - .1 Megger circuits, feeders and equipment up to 350 V with a 500 V instrument.
 - .2 Megger 350-600 V circuits, feeders and equipment with a 1000 V instrument.

- .3 Check resistance to ground before energizing.
- .3 Provide instruments, meters, equipment and personnel required to conduct tests during and at conclusion of project.

4.5 CLEANING

- .1 Clean and touch up surfaces of shop-painted equipment scratched or marred during shipment or installation, to match original paint.
- .2 Clean and prime exposed non-galvanized hangers, racks and fastenings to prevent rusting.

END OF SECTION

1. GENERAL

1.1 REFERENCES

- .1 CSA C22.2 No .0.3, last revision - Test Methods for Electrical Wires and Cables.
- .2 CAN/CSA-C22.2 No. 131, last revision - Type TECK 90 Cable.

1.2 PRODUCT DATA

- .1 Submit product data in accordance with administrative clauses.

1.3 WASTE MANAGEMENT AND DISPOSAL

- .1 Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Waste Management Plan.

2. PRODUCTS

2.1 WIRES

- .1 Conductors: stranded for 12 AWG and larger. Minimum size: 12 AWG.
- .2 Copper conductors: size as indicated, with 600V insulation of chemically cross-linked thermosetting polyethylene material rated RW90.

2.2 TECK CABLE

- .1 Cable: to CAN/CSA-C22.2 No. 131.
- .2 Conductors:
 - .1 Grounding conductor: copper.
 - .2 Circuit conductors: copper, size as indicated.
- .3 Insulation:
 - .1 Type: ethylene propylene rubber.
 - .2 Chemically cross-linked thermosetting polyethylene rated type RW90, 600V.
- .4 Inner jacket: polyvinyl chloride material.
- .5 Armour: aluminum.
- .6 Overall covering: thermoplastic polyvinyl chloride material.

- .7 Fastenings:
 - .1 One hole straps made of anticorrosion material to secure surface cables 50 mm and smaller. Two hole straps for cables larger than 50 mm.
- .8 Connectors:
 - .1 In aluminium, watertight and approved for TECK cable.

3. EXECUTION

3.1 INSTALLATION OF TECK CABLE 0 -1000 V

- .1 Hardly fix all cables to prevent damage.
- .2 Use only anticorrosion hardware.
- .3 Protect mechanically all cables where they can be damage.

END OF SECTION

1. GENERAL

1.1 REFERENCES

- .1 American National Standards Institute (ANSI)/Institute of Electrical and Electronics Engineers (IEEE)
 - .1 ANSI/IEEE 837, last revision - Qualifying Permanent Connections Used in Substation Grounding.
- .2 Canadian Standards Association, (CSA International)
- .3 CAN/CSA Z32, last revision - Electrical Safety and Essential Electrical Systems in Health Care Facilities.

1.2 WASTE MANAGEMENT AND DISPOSAL

- .1 Remove from site and dispose of all packaging materials at appropriate recycling facilities.
- .2 Divert unused metal materials from landfill to metal recycling facility as approved by Client.

2. PRODUCTS

2.1 EQUIPMENT

- .1 Insulated grounding conductors: green.
- .2 Non-corroding accessories necessary for grounding system, type, size, material as indicated, including but not necessarily limited to:
 - .1 Grounding and bonding bushings.
 - .2 Protective type clamps.
 - .3 Bolted type conductor connectors.
 - .4 Thermit welded type conductor connectors.
 - .5 Bonding jumpers, straps.
 - .6 Pressure wire connectors.

3. EXECUTION

3.1 INSTALLATION GENERAL

- .1 Install complete permanent, continuous grounding system including, electrodes, conductors, connectors, accessories.

- .2 Install connectors in accordance with manufacturer's instructions.
- .3 Protect exposed grounding conductors from mechanical injury.
- .4 Make buried connections, and connections to conductive water main, electrodes, using copper welding by thermit process.
- .5 Use mechanical connectors for grounding connections to equipment provided with lugs.
- .6 Soldered joints not permitted.
- .7 Install separate ground conductor to outdoor lighting standards.
- .8 Ground secondary service pedestals.

3.2 SYSTEM AND CIRCUIT GROUNDING

- .1 Install system and circuit grounding connections of primary and secondary system.

3.3 EQUIPMENT GROUNDING

- .1 Install grounding connections to typical equipment included in, but not necessarily limited to following list. Service equipment, transformers, switchgear, duct systems, frames of motors, motor control centres, starters, control panels, building steel work, generators, elevators and escalators, distribution panels, outdoor lighting.

3.4 FIELD QUALITY CONTROL

- .1 Perform tests in accordance with Section 26 05 00 - Common Work Results.
- .2 Perform ground continuity and resistance tests using method appropriate to site conditions and to approval of Department's Representative and local authority having jurisdiction over installation.
- .3 Perform tests before energizing electrical system.

END OF SECTION

1. GENERAL

1.1 REFERENCES

- .1 Canadian Standards Association (CSA International)
 - .1 CAN/CSA C22.2 No. 18, last revision - Outlet Boxes, Conduit Boxes, Fittings and Associated Hardware, A National Standard of Canada.
 - .2 CSA C22.2 No. 45, last revision - Rigid Metal Conduit.
 - .3 CSA C22.2 No. 56, last revision - Flexible Metal Conduit and Liquid-Tight Flexible Metal Conduit.
 - .4 CSA C22.2 No. 83, last revision - Electrical Metallic Tubing.
 - .5 CSA C22.2 No. 211.2, last revision - Rigid PVC (Unplasticized) Conduit.
 - .6 CAN/CSA C22.2 No. 227.3, last revision - Nonmetallic Mechanical Protection Tubing (NMPT), A National Standard of Canada (February 2006).

1.2 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with administrative clauses.

2. PRODUCTS

2.1 CONDUITS

- .1 Rigid pvc conduit: to CSA C22.2 No. 211.2.

2.2 CONDUIT FITTINGS

- .1 Fittings: to CAN/CSA C22.2 No. 18.
- .2 Ensure factory "ells" where 90 degrees bends for 25 mm and larger conduits.

2.3 EXPANSION FITTINGS FOR RIGID CONDUIT

- .1 Weatherproof expansion fittings for linear expansion at entry to panel.

2.4 FISH CORD

- .1 Polypropylene.

3. EXECUTION**3.1 MANUFACTURER'S INSTRUCTIONS**

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

3.2 INSTALLATION

- .1 Use rigid pvc conduit.
- .2 Install fish cord in empty conduits.
- .3 Dry conduits out before installing wire.

3.3 CONCEALED CONDUITS

- .1 Install underground conduits parallel to prefab concrete slabs.

3.4 CONDUITS UNDERGROUND

- .1 Slope conduits to provide drainage.

3.5 CLEANING

- .1 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

1. GENERAL**1.1 SECTION INCLUDES**

- .1 Material and installation of standard distribution panel.

1.2 REFERENCES

- .1 Canadian standard association (CSA)/CSA International
 - .1 CSA C22.2 no 29, last revision – Panelboards and enclosed panelboards.

1.3 SHOP DRAWING

- .1 Submit all required drawing, according to administrative clauses.
- .2 Drawing must indicate electrical specification of panel, the number, the type and the size of breaker and panelboard dimension.

1.4 WASTE MANAGEMENT AND DISPOSAL

- .1 Remove from site and dispose of all packaging materials at appropriate recycling facilities.
- .2 Divert unused metal materials from landfill to metal recycling facility as approved by Department's Representative.

2. PRODUCTS**2.1 DISTRIBUTION PANEL**

- .1 Panelboard : according to CSA C22.2 no 29 standard. All panelboards must be provide by only one manufacturer.
 - .1 Breakers must be installed in panelboards before delivery on site.
 - .2 Identification plates of manufacturer must indicate doivent indiquer, in addition to the data required by CSA, the fault current that the panel and circuit breakers can withstand.
- .2 240V panelboards, holding of busbars at fault current, 10kA (symmetrical); the circuit-breakers must have a nominal cut-off capacity of 10kA (symmetrical) or as indicated.
- .3 Make connections so that odd numbered circuits are powered by the left bar and even numbered ones by the right bar. Each circuit breaker must have permanent identification of the circuit number and phase.
- .4 Panelboards: rating current, numbers and sizes of branch circuit breakers as indicated.

- .5 All panelboards must have the same type of lock. Provide two keys for each panel.
- .6 Copper busbars; neutral bar of the same ampacity as phase bars.
- .7 Copper busbars that can receive bolted breakers.
- .8 Panel door frame with hidden bolts and hinges.

2.2 CIRCUIT BREAKERS

- .1 Circuit breakers according to section 26 28 21 – Molded case breakers.
- .2 Unless otherwise indicated, panelboards must be fitted with thermal magnetic trip circuit breakers.

2.3 MATERIAL IDENTIFICATION

- .1 Identify material according to section 26 05 00 - Electricity – Common work result.
- .2 Nameplates for each sign indicating the name of the panel, the circuit and voltage.
- .3 Complete circuit nomenclature, with typed legend indicating the location and load of each circuit.

3. EXECUTION

3.1 INSTALLATION

- .1 Install panels where indicated, firmly, plumb, square and aligned with adjacent surfaces.
- .2 Install distribution panels at prescribed height.
- .3 Connect all circuits to load elements.
- .4 Connect neutral conductors to common neutral bus bar.

END OF SECTION

1. GENERAL

1.1 SECTION INCLUDES

- .1 Equipment and installation for ground fault circuit interrupters (GFCI).

1.2 REFERENCES

- .1 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-C22.2 No.144, last revision - Ground Fault Circuit Interrupters.
- .2 National Electrical Manufacturers Association (NEMA)
 - .1 NEMA PG 2.2, last revision - Application Guide for Ground Fault Protection Devices for Equipment.

1.3 SUBMITTALS

- .1 Submittals in accordance with administrative clauses.
- .2 Submit product data and shop drawings.

1.4 WASTE MANAGEMENT AND DISPOSAL

- .1 Remove from site and dispose of all packaging materials at appropriate recycling facilities.
- .2 Collect and separate for disposal packaging material for recycling in accordance with Waste Management Plan.

2. PRODUCTS

2.1 MATERIALS

- .1 Equipment and components for ground fault circuit interrupters (GFCI): to CAN/CSA-C22.2 No.144.
- .2 Components comprising ground fault protective system to be of same manufacturer.

2.2 BREAKER TYPE GROUND FAULT INTERRUPTER

- .1 Single pole ground fault circuit interrupter for 15A, 120V, 1 phase circuit c/w test and reset facilities.
- .2 Single pole ground fault circuit interrupter for 30A, 120V, 1 phase circuit c/w test and reset facilities.

3. EXECUTION

3.1 INSTALLATION

- .1 Do not ground neutral on load side of ground fault relay.
- .2 Pass phase conductors through zero sequence transformers.
- .3 Connect supply and load wiring to equipment in accordance with manufacturer's recommendations.

3.2 FIELD QUALITY CONTROL

- .1 Perform tests in accordance with Section 26 05 00 - Common Work Results.
- .2 Arrange for field testing of ground fault equipment by Contractor before commissioning service.
- .3 Demonstrate simulated ground fault tests.

END OF SECTION

1. GENERAL**1.1 SECTION INCLUDES**

- .1 Material and installation of molded case breakers and ground fault protection.

1.2 REFERENCES

- .1 Canadian standard association (CSA)/CSA International
- .2 CSA-C22.2 no 5, last revision - Molded-case circuit breakers, molded-case switches and circuit-breaker enclosures (Tri-national standard with UL 489 and NMX-J-266-ANCE-2016).

1.3 SUBMITTALS

- .1 Submittals according to administrative clauses.
- .2 Submit required shop drawing and specifications.

1.4 WASTE MANAGEMENT AND DISPOSAL

- .1 Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Waste Management Plan.

2. PRODUCTS**2.1 GENERAL REQUIREMENTS**

- .1 Circuit breakers and ground fault devices: according to CSA C22.2 no 5.
- .2 Molded case circuit breakers, bolted to busbars: quick-lock and snap-lock type, manually operated and automatic.
- .3 Common trip circuit breakers: Equipped with a single lever on multi-pole circuits.
- .4 Breaker must have a breaking capacity of at least 10 kA RMS symmetrical.

3. EXECUTION**3.1 INSTALLATION**

- .1 Install circuit breakers as per manufacturer's instructions.

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 01 33 00 – Submittal Procedures
- .2 Section 01 61 00 – Common Product Requirements
- .3 Section 31 23 33 – 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)

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 RELATED REQUIREMENTS

- .1 Section 01 35 43 - Environmental Procedures
- .2 Section 02 41 16 – Structure Demolition
- .3 Section 26 05 34 - Conduits, conduit fastening and conduit fittings
- .4 Section 31 05 16 – Aggregate Materials
- .5 Section 31 32 19.01 – Geotextiles

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.
 - .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 Reinstall 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.
- .2 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 (FOS)
 - .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 06 40 00 – Timber Sheating

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 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
- .2 Wire nails, spikes, staples: to CSA-B111.
- .3 Bolts, nuts, washers: to ASTM A307. All bolts must be galvanised.
- .4 Galvanizing: will conform to CAN/CSA-G164 at a rate of 600 g/m².
- .5 Lag-screws: to standard ANSI/ASME B18.2.1 galvanized.
- .6 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 AND FENDERS

- .1 Install hardwood sheating and fenders as indicated on the drawings along the face of the wharf.
- .2 Secure each sheating and fender with lag screws. All lag screws will be countersunk.
- .3 Do not notch or cut sheating nor fender to provide straight wharf face. Continuous blocking will be installed behind sheating and fender and shims to provide a straight face.
- .4 Fenders 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 color 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/ft³ (600 kN-m/m³).
 - .5 ASTM D1557-09, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000ft-lbf/ft³) (2,700kN-m/m³).
 - .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 MG56 placed on a geotextile membrane ;
 - .2 The upper foundation layer composed 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

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 03 30 00 Cast-in-Place Concrete
- .5 Section 06 03 00 Timber Cribwork

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 New mooring cleats
 - .1 Provide cleats as indicated on drawings.
 - .2 If Contractor wishes to use molded cleats, they must have a nominal capacity of 11 metric tons, comply to ASTM A27/A27M grade 65-35, and be galvanized as indicated on the drawings.
 - .3 Anchor bolts, mechanical bolts and nuts: ASTM A307, galvanized and plate compliant to ASTM A36/A36M.
 - .4 Galvanization: to ASTM-A123/A123M-09, zinc (hot dipped), minimum 610 g/m².
 - .5 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.

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

FORMULAIRE DE SURVEILLANCE ENVIRONNEMENTALE

IDENTIFICATION DU PROJET	
Promoteur :	Pêches et Océans Canada – Direction des Ports pour petits bateaux
Site :	Chevery
Titre du projet :	Projet de reconstruction du quai de Chevery
Date de réalisation des travaux :	
Date de réalisation de la surveillance :	
Activité de surveillance réalisée :	Visite sur le terrain lors des travaux
	Autre activité de surveillance (spécifier) :

Mesures d'atténuation :	Mesure réalisée			Si non ou N/A, raison :
L'entrepreneur respecte les consignes fournies dans le devis produit par PPB, en ce qui a trait aux chapitres sur la protection de l'environnement.	Oui	Non	N/A	
Utiliser de la machinerie et des équipements lourds bien entretenus et en bon état de fonctionnement.	Oui	Non	N/A	
Inspecter régulièrement la machinerie afin de vérifier le bon fonctionnement et l'entretenir en conformité avec les recommandations d'usage.	Oui	Non	N/A	
Arrêter les moteurs des véhicules et des équipements à essence lorsqu'ils ne sont pas utilisés.	Oui	Non	N/A	
Interdire, en tout temps, le brûlage des déchets dans la zone des travaux ou à proximité.	Oui	Non	N/A	
Planifier les travaux particulièrement bruyants durant les heures normales de travail et en conformité avec les exigences municipales, c'est-à-dire de 7:00 à 19:00.	Oui	Non	N/A	
Éviter autant que possible la marche au ralenti des moteurs.	Oui	Non	N/A	
Maintenir les équipements motorisés en bon état de marche (silencieux et autres système de réduction de bruits).	Oui	Non	N/A	
Si possible, les travaux en zone intertidale devront être réalisés à marée basse ou à plus ou moins deux heures de la marée basse afin de minimiser la remise en suspension des sédiments.	Oui	Non	N/A	
Les matériaux importés sur le site devront être propres à leur arrivée sur le site et devront être entreposés sous des	Oui	Non	N/A	

Mesures d'atténuation :	Mesure réalisée			Si non ou N/A, raison :
toiles de polyéthylène pour éviter leur mise en suspension lors de journée de grand vent.				
La machinerie ne devra pas être entreposée à moins de 30 m de la rive ou d'un cours d'eau, ni circuler sur les lits des milieux hydriques.	Oui	Non	N/A	
S'assurer que la machinerie est propre et exempte de fuites, d'espèces envahissantes et de mauvaises herbes nuisibles à son arrivée sur le site et la maintenir dans cet état par la suite.	Oui	Non	N/A	
Le nettoyage, l'entretien et le ravitaillement de la machinerie, ainsi que l'entreposage des hydrocarbures et des autres produits doivent être faits de manière à prévenir l'introduction de substances nocives dans l'eau.	Oui	Non	N/A	
Utiliser, si possible, une huile lubrifiante biodégradable pour les composantes de la machinerie qui seront en contact avec les eaux de surface.	Oui	Non	N/A	
Les travaux réalisés en milieu hydrique devront être limités le plus possible dans le temps.	Oui	Non	N/A	
Exiger que le bois ne provienne pas de forêts anciennes.	Oui	Non	N/A	
Respecter les recommandations/instructions du fabricant.	Oui	Non	N/A	
Exiger une assurance écrite du fournisseur que le bois traité a été produit en conformité avec les meilleures pratiques de l'industrie (Best management practices - BMP). S'assurer notamment qu'il respecte les critères de rétention adéquats pour le bois qui sera en contact avec le milieu marin.	Oui	Non	N/A	
Exiger que le bois traité à l'ACC ait subi un test à l'acide chromotropique vérifiant que le produit est bien fixé.	Oui	Non	N/A	
Exiger que le bois traité soit livré sous des toiles.	Oui	Non	N/A	
Inspecter le bois traité au moment de la construction pour vérifier s'il a des dépôts de surface et s'il est sec. Ne pas utiliser	Oui	Non	N/A	

Mesures d'atténuation :	Mesure réalisée				Si non ou N/A, raison :
le matériel non conforme.					
Ne pas broser, nettoyer ou couper du bois traité au-dessus de l'eau ou à proximité de zones écologiques sensibles.	Oui	Non	N/A		
Favoriser la taille et la préfabrication des pièces de bois selon les spécifications voulues avant leur traitement sous pression.	Oui	Non	N/A		
Envisager l'incorporation d'un hydrofuge lors du traitement du bois avec un agent à base d'eau.	Oui	Non	N/A		
En aucun temps des produits toxiques ne doivent être appliqués in situ ou lorsque le bois est directement en contact avec le milieu aquatique ou le surplombe.	Oui	Non	N/A		
Examiner avec le fournisseur la possibilité, pour le bois traité à l'ACC, de procéder à une période d'immersion industrielle en bassin pendant 24 ou 48 heures pour éliminer les surplus et éviter les rejets importants qui surviennent au début de la mise en place dans l'eau.	Oui	Non	N/A		
Sélectionner le lieu d'entreposage des matériaux en fonction des caractéristiques du milieu environnant (accessibilité, dimension de l'emplacement, distance par rapport aux milieux sensibles, etc.).	Oui	Non	N/A		
Localiser et aménager l'aire d'entreposage à une distance d'au moins 30 m des zones écologiquement vulnérables et cours d'eau, à une distance d'au moins 3 m des fossés de drainage et au-delà de la limite des pleines mers supérieures des grandes marées (PMSGM). Choisir un terrain plat ou sur une pente de moins de 10 %.	Oui	Non	N/A		
Entreposer le bois traité sur une membrane étanche et le recouvrir d'une toile protectrice pour le protéger des intempéries lorsqu'il n'est pas utilisé. Privilégier des surfaces de perméabilité limitée, comme de l'argile et de la terre compactée, de l'asphalte ou du béton loin des eaux de surface.	Oui	Non	N/A		

Mesures d'atténuation :	Mesure réalisée			Si non ou N/A, raison :
Si des interventions sont prévues sous le niveau de la pleine mer supérieure de grande marée (PMSGM), réaliser celles-ci lorsque la zone des travaux est exondée et stabiliser le site avant le retour de la marée.	Oui	Non	N/A	
Respecter les zones de travaux. Ne pas empiéter à l'extérieur des zones de travaux.	Oui	Non	N/A	
Bien baliser la zone de travail et ne pas circuler avec la machinerie lourde afin de ne pas endommager la végétation en place.	Oui	Non	N/A	
Éviter d'excéder la zone identifiée pour l'entreposage pour ne pas affecter la végétation.	Oui	Non	N/A	
Effectuer le plus possible les travaux à l'extérieur de la période de nidification, entre le 25 mai et le 21 juillet.	Oui	Non	N/A	
Ne pas approcher une colonie d'oiseaux marins et d'oiseaux aquatiques pendant la période de reproduction et de nidification, demeurer à au moins 300 m des colonies et éviter de déranger les oiseaux migrateurs pendant la période de reproduction.	Oui	Non	N/A	
Éviter de rejeter toute matière résiduelle dans l'eau et éviter les déversements d'hydrocarbures.	Oui	Non	N/A	
Ne pas réaliser de travaux entre 21h00 et 5h00 du 1er juillet au 31 octobre afin de protéger les espèces présentes dans le secteur.	Oui	Non	N/A	
Ne pas réaliser de travaux entre le 16 mai et le 30 juin inclusivement afin de protéger les espèces présentes dans le secteur.	Oui	Non	N/A	
Lorsqu'un cétacé ou une tortue luth est observé à moins de 200 m de la zone des travaux en milieu aquatique, il est recommandé d'interrompre les travaux et d'attendre que l'individu s'éloigne à plus de 200 m.	Oui	Non	N/A	
Suspendre les travaux si un individu d'une des espèces à statut particulier est observé dans un rayon de 200 m autour de l'aire des travaux. Les travaux pourraient reprendre lorsque l'individu en	Oui	Non	N/A	

Mesures d'atténuation :	Mesure réalisée			Si non ou N/A, raison :
question se sera éloigné à plus de 200 m ou après une période de 30 minutes sans observation.				
Pour les équipements qui ont été nettoyés et entreposés sur la terre ferme juste avant la réalisation des travaux, l'entrepreneur est seulement tenu de fournir, par écrit au chargé de projet, une liste de ces équipements, le lieu d'entreposage et la date envisagée pour la mise à l'eau. Le chargé de projet doit être en mesure de vérifier si les équipements étaient bien propres et entreposés sur la terre ferme avant la réalisation des travaux.	Oui	Non	N/A	
Dans la perspective de l'utilisation d'équipements déjà à l'eau, l'entrepreneur doit prouver que ses équipements sont restés dans le golfe du Saint-Laurent au cours des 12 derniers mois ou plus, sans quoi il doit faire l'inspection recommandée démontrant l'absence des espèces envahissantes.	Oui	Non	N/A	
L'Administration portuaire de Chevery avisera ses membres des travaux prévus et de la période d'exécution.	Oui	Non	N/A	
Respecter toutes les conditions de l'approbation émise en vertu de la <i>Loi sur la protection de la navigation</i> , le cas échéant.	Oui	Non	N/A	
Émettre un avis à la navigation pour informer de la période d'exécution et de la zone des travaux.	Oui	Non	N/A	
Assurer la sécurité des utilisateurs en balisant la zone des travaux et en installant une signalisation adéquate au niveau de la navigation.	Oui	Non	N/A	
Planifier les travaux à effectuer durant les heures normales de travail et en conformité avec les exigences municipales.	Oui	Non	N/A	
Suspendre les travaux nécessitant l'emploi d'engins particulièrement bruyants le dimanche, les jours fériés ainsi que le soir et la nuit entre 19h00 et 7h00.	Oui	Non	N/A	
Limiter l'accès au chantier aux personnes autorisées.	Oui	Non	N/A	
S'assurer que les travaux soient faits en conformité avec le Code de sécurité pour les travaux de construction.	Oui	Non	N/A	

Mesures d'atténuation :	Mesure réalisée			Si non ou N/A, raison :
S'assurer que les travailleurs possèdent tous les équipements de protection individuelle requis.	Oui	Non	N/A	
Assurer la protection de la population aux abords du chantier en utilisant des clôtures de protection, une signalisation et une surveillance adéquates.	Oui	Non	N/A	
Délimiter un périmètre de sécurité afin de restreindre l'accès au site aux personnes non autorisées.	Oui	Non	N/A	
Respecter les horaires et les périodes de travail prévus par la municipalité.	Oui	Non	N/A	
Respecter les codes, normes et règlements généraux relatifs à la santé et à la sécurité des travailleurs et du public.	Oui	Non	N/A	
Adopter des mesures préventives lors de la conduite et du déplacement de la machinerie lourde sur le quai comme celles proposées par l'Association paritaire pour la Santé et sécurité du travail du secteur de la construction (ASP Construction).	Oui	Non	N/A	
Disposer séparément des matières résiduelles non recyclables et recyclables.	Oui	Non	N/A	
S'assurer qu'aucun déchet n'est laissé sur le site.	Oui	Non	N/A	
Disposer de tous les déchets et matières résiduelles conformément à la réglementation en vigueur et s'assurer qu'aucune matière résiduelle ne soit brûlée, enfouie ou submergée sur place.	Oui	Non	N/A	
Il est interdit d'évacuer des hydrocarbures, des solvants, des diluants ou toutes substances dangereuses dans les cours d'eau, les égouts pluviaux et sanitaires.	Oui	Non	N/A	
Aucun rejet de matières dangereuses ne sera toléré (huiles et eaux usées, etc.) dans l'eau. Leur disposition sera faite de façon conforme à la réglementation en vigueur afin de ne pas nuire à l'environnement.	Oui	Non	N/A	
Veiller à ce que toutes les matières dangereuses destinées à l'élimination soient gérées en conformité avec la réglementation en vigueur (produits de préservation du bois, contenants vides, sciures et résidus de bois, sols souillés,	Oui	Non	N/A	

Mesures d'atténuation :	Mesure réalisée				Si non ou N/A, raison :
etc.).					
L'entrepreneur devra s'assurer que la machinerie est en bon état de fonctionnement (camions et toute autre machinerie utilisée) et bien entretenue, pour éviter les fuites d'huiles, de graisses et de carburants.	Oui	Non	N/A		
L'entrepreneur devra préconiser des équipements utilisant une huile végétale biodégradable de type HF spécialement conçue pour ce type d'engin.	Oui	Non	N/A		
L'entrepreneur devra identifier les risques de déversement des substances toxiques qui seront utilisées ou entreposées pendant la durée des travaux. Il devra prévoir des mesures de prévention et de sécurité, de même qu'un plan d'urgence en cas de déversement.	Oui	Non	N/A		
Les hydrocarbures pétroliers seront manipulés avec soin, entreposés avec précaution (au minimum à 30 mètres de la rive) et éliminés selon la réglementation en vigueur afin de prévenir les déversements accidentels dans l'eau ou sur le sol.	Oui	Non	N/A		
L'entretien des véhicules, les pleins d'essence ainsi que l'entreposage de carburant ou autres matières dangereuses doivent se faire, autant que possible, à une distance minimale de 30 mètres de la rive. Si cette distance ne peut être respectée, des mesures de confinement devront être appliquées.	Oui	Non	N/A		
L'entrepreneur devra avoir sur le site, tout au long des travaux, une trousse d'urgence de récupération des produits (<i>spill kit</i>) facilement accessible.	Oui	Non	N/A		
Lors du ravitaillement de la machinerie en carburant, toutes les mesures sont prises pour minimiser les risques de déversement accidentel (stabilisation des équipements et des engins avant de procéder, présence d'une trousse complète d'intervention en cas de déversement de produits pétroliers, etc.).	Oui	Non	N/A		
Advenant un bris des équipements / déversement accidentel, les mesures d'urgence appropriées seront appliquées afin de contrôler la situation et, le cas échéant, le bris sera réparé immédiatement. La zone touchée et contaminée par les substances toxiques sera contenue, nettoyée et le matériel	Oui	Non	N/A		

Mesures d'atténuation :	Mesure réalisée			Si non ou N/A, raison :
contaminé sera enlevé et acheminé à un site autorisé via une firme spécialisée.				
L'incident devra être rapporté immédiatement à la ligne d'urgence d'Environnement Canada au 1-866-283-2333, au réseau d'alerte de la Garde côtière 1-800-363-4735, au MDDELCC 1-866-694-5454 et au surveillant de chantier. Les hydrocarbures devront être récupérés et les sols contaminés disposés conformément à la réglementation en vigueur.	Oui	Non	N/A	
Un plan d'intervention devra être prévu avant le début des travaux et communiqué et connu de tous les intervenants.	Oui	Non	N/A	
Les sols, les sédiments ou les matériaux de remblai, selon le cas, contaminés par un déversement accidentel devront être placés en pile sur des toiles étanches et recouvertes de toiles étanches, être échantillonnés selon le volume de sol en cause selon les cadences définies dans le Guide d'échantillonnage à des fins d'analyses environnementales, Cahier 5, être soumis à des analyses chimiques en laboratoire, soit les hydrocarbures pétroliers C ₁₀ à C ₅₀ , les hydrocarbures aromatiques polycycliques (HAP) et les composés organiques volatils (COV) et être gérés selon les directives de la Grille de gestion des sols contaminés excavés du MDDELCC ou selon la réglementation en vigueur et ainsi acheminés vers un site autorisé.	Oui	Non	N/A	
Les eaux contaminées par un déversement accidentel devront être confinées en vue d'être caractérisées ou prises en charge directement par une compagnie spécialisée qui les acheminera vers un centre de traitement approuvé par le MDDELCC.	Oui	Non	N/A	

Commentaires (observations sur le terrain, mauvaise gestion des déchets, présence d'huiles usées, fuites sur la machinerie, travaux réalisés non pris en compte dans l'évaluation environnementale, etc. - tout détail n'étant pas mentionné dans les mesures d'atténuation) :

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RÉALISATION DE LA SURVEILLANCE	
Préparé par : Date : Titre : Organisme : No de tél. :	
Je certifie que les renseignements fournis ci-dessus sont exacts et complets et qu'ils correspondent à mon interprétation des travaux.	
Signature :	Date :
Rédigé par :	
Titre du poste :	
Compagnie :	

Note : Ce formulaire de surveillance du respect des mesures d'atténuation, ou un rapport équivalent complété par le surveillant de chantier devra être acheminé à tous les gestionnaires ayant approuvés le rapport, à la fin des travaux.