

PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

LA ROMAINE

Structural reinforcement of wharf

Project n° R.112748.001

FOR TENDER

April 26, 2021

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Divisions 01, 02, 03, 05 et 35

Prepared by :

Olivier Morneau, ing.

Verified by :

Olivier Gauthier, ing., PMP

April 26, 2021

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LA ROMAINE

Structural reinforcement of wharf

Project n° R.112748.001

FOR TENDER

Division 26 – Cathodic Protection

Prepared by :



George Calavre, ing., M.Sc.

Verified by :

A handwritten signature in blue ink that reads "George Calavre".

George Calavre, ing., M.Sc.

April 26, 2021

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DIVISION 01

GENERAL REQUIREMENTS



Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Not used.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- .1 This project will take place at the commercial wharf of La Romaine (Gethsémany) in the region of Basse Côte-Nord. This locality is approximately 460 km from Sept-Îles and is accessible by air and by the maritime service operated by Relais Nordik.
- .2 The work covered by this contract mainly consists of reinforcing certain piles located inside the wharf, adding wales outside the sheet piles and repairing the sheet piles. Various construction work is also included in this contract.
- .3 The following list of work is not necessarily complete and does not release the Contractor from his responsibility to carry out any other work, changes or modifications necessary to complete the work of this contract with satisfaction:
 - .1 The reinforcement of 45 H-piles located inside the dock (under the loading dock floor) in the berths sector, by adding bolted or welded steel profiles and plates;
 - .2 Adding steel wales outside the steel sheet pile to faces D and J, by extending the existing tie rods through the wall surface;
 - .3 The repair of steel sheet piles by means of welded steel plates, in various configurations;
 - .4 Work to update cathodic protection;
 - .5 The repair of an existing access opening through the sheet pile;
 - .6 The repair of five (5) concrete bollard bases;
 - .7 Modification of fender supports on faces D and J of the wharf;
 - .8 Installation of face J existing fenders on face D;
 - .9 Supply and installation of new fenders on face J;
 - .10 Supply and installation of new fenders on faces E to I;
 - .11 Repair of service ladders by adding rungs.

1.3 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Submit Project construction progress schedule in accordance with Section 01 32 16.19 – Construction Progress Schedule - Bar (GANTT) Chart].
- .3 Submit site-specific and Work Plan Health and Safety Plan in accordance with Section 01 35 29.06 – Health and Safety Requirements.

1.4 WORK SEQUENCE

- .1 Construct Work in stages to accommodate the use of premises by Transport Canada and users during construction.
- .2 Co-ordinate Progress Schedule according to the occupation of the premises by Transport Canada, the Relais Nordik, Harnois and the Fiducie during the construction work.
- .3 Maintain fire access/control.
- .4 Protect workers and public safety.

1.5 CONTRACTOR USE OF PREMISES

- .1 Limit use of premises for Work to allow
 - .1 Continued operation of vessel operating the Basse-Côte-Nord maritime services by Groupe Desgagnés and handled by Relais Nordik;
 - .2 Delivery of fuel on behalf of La Fiducie en approvisionnement de carburant de la Basse-Côte-Nord.
- .2 Co-ordinate the use of the premises as specified on the drawings and as directed by the Departmental Representative.
- .3 During the stopovers of maritime services, hire a controller placed at the entrance of the wharf in order to limit access to authorized persons only, and to the equipment and vehicles required for unloading and loading of cargo. Apart from these activities, maintain the barrier at the entrance of the wharf closed.
- .4 If necessary, obtain and pay for use of additional storage or work areas needed for operations under this Contract.
- .5 Refer to Section 01 51 00 – Temporary Utilities, Section 01 52 00 – Construction Facilities and Section 01 56 00 – Temporary Barriers and Enclosures, for temporary facilities, access roads and parking areas, traffic regulations, and utilities.
- .6 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
- .7 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Departmental Representative.
- .8 Ensure that operations conditions of exiting work at completion are still the same, equal to or better than that which existed before new work started.

1.6 OWNER OCCUPANCY

- .1 Transport Canada will occupy premises during entire construction period for execution of normal operations.
- .2 Co-operate with Departmental Representative in scheduling operations to minimize conflict and to facilitate Departmental Representative usage.
- .3 Ensure access to building at all times.

1.7 SITE VISIT

- .1 No visit of the site will be organized by the Departmental Representative. The Contractor may, however, visit the site to examine site conditions and assess the condition of the facilities, the constraints and difficulties which might hinder the execution of work, including among others the incidence of tides, harsh weather conditions and exposure of the work site to the latter and any other conditions likely affect the execution of work.
- .2 The Contractor shall become aware of tidal conditions on the following website: «<https://www.waterlevels.gc.ca/fra/station?sid=2530> ».
- .3 Deficient knowledge of local conditions may not be argued to claim additional amounts of money or work extension.

1.8 PROJECT MEETINGS

- .1 Departmental Representative will organize site meetings to be held every three (3) weeks and will draft the minutes.
- .2 The Contractor shall make arrangements to provide a room or other space to hold the meetings.

1.9 ESTABLISHMENT OF WORK

- .1 Assume full responsibility for implementing the work and ensure the full execution with respect to indicated locations, lines and levels.
- .2 Before starting work, the Contractor shall verify all field measurements and notify the Departmental Representative of any error or mismatch.
- .3 All elevations indicated on the drawings refer to chart datum (tidal datum).

1.10 EXISTING SERVICES

- .1 Notify, Departmental Representative and utility companies of intended interruption of services and obtain required permission.
- .2 Establish location and extent of service lines in area of work before starting Work. Notify Departmental Representative of findings.
- .3 Submit schedule for approval by Departmental Representative for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.
- .4 Where unknown services are encountered, immediately advise [Consultant] and confirm findings in writing.
- .5 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.
- .6 Record locations of maintained, re-routed and abandoned service lines.
- .7 Construct barriers, as required, in accordance with Section 01 56 00 – Temporary Barriers and Enclosures.

1.11 DOCUMENTS REQUIRED

- .1 Maintain at job site, one copy of each document as follows:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Directives of construction site.
 - .5 Reviewed Shop Drawings.
 - .6 List of Outstanding Shop Drawings.
 - .7 Change Orders.
 - .8 Other Modifications to Contract.
 - .9 Field Test Reports.
 - .10 Copy of Approved Work Schedule.
 - .11 Health and Safety Plan and Other Safety Related Documents.
 - .12 Other documents as specified.

1.12 METHOD OF MEASUREMENT FOR PAYMENT

GENERALITY

- .1 Contractor must include the cost of items not listed in the table in the cost of works which require them.

METHOD OF MESUREMENT

- .1 Unless otherwise indicated, the provision of expertise and the supply of materials, labour, tools, equipment, protection, transportation, administrative costs, profit, financing, etc., required to complete the work of this contract are included in each of the items described below.
- .2 Tendered prices shall include the cost of miscellaneous work which, although not specified in the contract documents, are customary and necessary for the completion of works required under this contract so that such works fulfill their intended use. Tendered prices must include all related fees.
- .3 The method of measurement for the categories of labour, tools, equipment or materials required to perform the work of this project is as follow:

.1 ITEM N° 01 – SITE ORGANIZATION

- .1 This item is measured as a global unit and includes all project work that is not itemized on the bid form, as well as all the items covered by the section 01 of Specifications.
- .2 Site organization is paid upon the contractor's detailed cost breakdown.
- .3 This item also includes theses specific work:
 - i. Operation continuity:
This item includes all work and all means deployed to assure the operation continuity of Relais Nordik and Harnois, including time loss.
 - ii. Time loss and protection:
This item includes all fees caused by bad weather conditions, including the protection of structures during demolition, construction or already built.
 - iii. Work in confined spaces:
This item includes all costs related to health and safety requirements for confined spaces, including, but not limited to, equipment, additional labor and associated time loss.
 - iv. Permits:
This item includes all costs associated with obtaining all permits.
 - v. Navigation cost:
If required, this item includes all costs associated with the navigation of the Contractor's floating equipment.
 - vi. Lightning:
All cost related to the lightning of the work site, for the entire duration of the work, according to the contractor's needs.

.2 ITEM N° 02 – MOBILIZATION AND DEMOBILIZATION

- .1 This item is measured as a global unit and include all the elements required for the contractor's mobilization and demobilization, for the entire durations of the project.
- .2 Mobilization and demobilization is paid upon the contractor's detailed cost breakdown.

.3 ITEM N° 03 – FENDERS

- .1 This item is measured per unit
- .2 This item includes, but not limited to, materials, labor and equipment required for the following work on faces D and J of the wharf:
 - i. Removal, recovery and storage of current fenders. It also includes the delivery of one of these fenders to Transport Canada, near the garage;
 - ii. Demolition of the existing fender fastening system and construction of new fender supports
- .3 This item includes the reinstallation of the fenders on the face D of the wharf.
- .4 This item includes the supply and installation of new fenders on the face J of the wharf. The Contractor must refer to section 01 32 16.19 – Construction progress schedule – Bar (GANTT) chart for specific requirements regarding fenders delivery time.
- .5 This item includes, but not limited to, materials, labor and equipment required for the following work on faces E to I of the wharf:
 - i. Removal, recovery and delivery of current fenders to Transport Canada;
 - ii. Supply and installation of new fenders. The Contractor must refer to section 01 32 16.19 – Construction progress schedule – Bar (GANTT) chart for specific requirements regarding fenders delivery time.
- .6 The bid form is divided as follow:
 - 3.1 *Fenders recovery on faces D et J*
 - 3.2 *Fenders supports modification and reinstallation of fenders on face D*
 - 3.3 *Fenders supports modification on face J*
 - 3.4 *Fenders supply and installation on face J*
 - 3.5 *Existing fenders recovery and supply and installation of new fenders on faces E à I.*

.4 ITEM N° 04 – NEW STEEL SHEET PILE APPROACH UPPER WALES

- .1 This item is measured as à global unit
- .2 This item includes, but not limited to, materials, labor and equipment required for the following work on faces D and J of the wharf:
 - i. Welding angles to sheet piles;
 - ii. Sheet pile boring, HSS tube insertion, manual excavation, tie rod cleaning and removal of existing nut if required;
 - iii. Coupler, tie rod, steel plate and wale installation;
 - iv. Grouting of HSS tubes.
- .3 This item includes surface preparation, and welding of plates, shims and supports.

.5 ITEM N° 05 – REPAIR OF THE H-PILES UNDER THE WHARF

- .1 This item is measured per unit
- .2 This item includes, but not limited to, an underwater survey prior to the work, in order to locate, validate and measure the piles to be repaired. The elevations and thicknesses should also be checked, to ensure that the proposed concept can be used. Templates should be used to briefly check the thickness of the footings of all the piles, to ensure that elements other than those shown on the plan do not represent a safety issue.
- .3 This item includes supply, manufacture and installation of pile repair elements, jigs, templates, lifting systems, temporary installations, as well as all elements required for on-site adjustment, as shown in the plans
- .4 This item also includes a final video inspection of the repairs performed toward the acceptance of the work

.6 ITEM N° 06 – UPDATE OF CATHODIC PROTECTION

- .1 This item is measured as à global unit
- .2 This item includes, but not limited to, materials, labor and equipment required to carry out all the work shown on drawings and covered, in particular, in section 26 42 30 – Cathodic Protection.

.7 ITEM N° 07 –STEEL SHEET PILES REPAIRS

- .1 This item is measured per square meter of supplied and installed steel plate

- .2 This item includes, but not limited to, the survey required to establish the actual dimensions of repair plates, supply, manufacture, on-site inspection with the Departmental Representative, surface preparation and welding of plates and other items required for the repair. It is very important to note that the details shown in drawings are intended to indicate the principle of repair and that it is expected that the Contractor must adapt the concept according to the alignment and geometry of the elements found on the site, which vary depending on location.
- .3 Surfaces to be repaired are established at the start of work with the Departmental Representative during a simultaneous inspection. The Contractor must provide all the plates required on the plan, but only the repaired areas are paid. All costs related to the supply of non-installed plates must be included in this item.

.8 ITEM N° 8 – BOLLARD BASE REPAIRS

- .1 This item is measured per unit
- .2 This item includes, but not limited to, the saw cuts, the concrete demolition disposal of demolition materials, cleaning and surface preparation of the area to be repaired. This item includes supply and installation of chemical anchors, formwork (and their removal), all the rebar required for the repair, concrete, curing, as shown on drawings.

.9 ITEM N° 09 –SERVICE LADDERS NEW RUNGS

- .1 This item is measured per unit.
- .2 This item includes, but is not limited to, supply and installation of the steel ladder rung to be added to the existing services ladders, as indicated on plans and specifications. This item includes the preparation of the steels and any other means required to the execution of the work below the water level, and it includes all related fees.

.10 ITEM N° 10 – ACCES OPENING DOOR REPAIR

- .1 This item is measured per unit
- .2 This item includes, but is not limited to, supply, assembly and installation of all material required for the construction of the access opening as shown on drawings. It also includes preliminary work, partial demolition and adjustments on site to ensure proper installation.
- .3 This item includes the recovery of the old door on the see bed.

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 Not used.

1.2 ACCESS AND EGRESS

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

1.3 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Departmental Representative to facilitate work as stated.
- .2 Maintain existing services to building and provide for personnel and vehicle access.
- .3 Safety may not be reduced due to construction activities. Provide other temporary measures to ensure the safety of persons and property.
- .4 Closures: protect work temporarily until permanent enclosures are completed.

1.4 EXISTING SERVICES

- .1 Works must not have any impact on the Fiducie's equipment (above-ground pipe, junction box, new-jerseys, guardrail, etc.). In the event of breakage, the Contractor shall repair the damage as soon as possible and according to the Fiducie's instructions.
- .2 It is forbidden to place materials on the above-ground pipe as well as on the connection cabinet, nor to use them in any other way. Consult the local Harnois representative if necessary

1.5 SPECIAL REQUIREMENTS

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

1.6 CAPACITY OF EXISTING STRUCTURES

- .1 The rehabilitation project is required by the existing conditions of the structural components of the wharf. The Contractor shall therefore foresee a work plan taking into account the condition of the wharf.
 - .1 Storage on large surface areas of the deck: maximum 20 kPa (1360 kg/m²).
 - .2 Concentrated loads and loads related to rolling stock:
 - .1 Full restriction within one (1) metre of the wharf face.
 - .2 Stress transferred to the transfer slab shall never exceed 20 kPa taking into account load distribution in the fill of the wharf; use a recognised engineering computational method.

- .3 Contractor to provide the technical sheets of the equipment he intends to use, together with his method of work no later than two (2) weeks before mobilization to the site for validation by the Departmental Representative. Loads on the ground surface must be provided.
- .3 Any specific loading case must first be submitted to the Departmental Representative for approval. Allow three (3) business days for analysis.

1.7 EXCLUSION ZONE

- .1 During construction of wales on faces D and J, an exclusion zone must be marked out on the wharf surface. That exclusion zone applies to any form of overloads, such as, but not limited to, storage of materials, road traffic or equipment. The wharf must be completely free in the exclusion zone.
- .2 The exclusion zone dimension equals the influence zone of a tie rod specified on the drawings, which is 4 m wide strip on each side of the tie rod being worked on.
- .3 The exclusion zone is effective as soon as the sheet pile is bored and must retain effective until one of the following condition is satisfied:
 - .1 Existing nut is left in place and the closer plate is welded;
 - .2 The new coupler lean against the existing wale and the closer plate is welded;
 - .3 New wale installation is completed.
- .4 Works requiring an exclusion zone must be coordinated with the Departmental Representative and the wharf guardian, according to premise operations. Exclusion zones must not interfere with wharf operations.
- .5 Tie rod works must be coordinated in a way that exclusion zones do not overlap. It is forbidden to work on adjacent tie rods, except form welding of angles.

1.8 MARITIME SERVICES

- .1 Ensure safe navigation, berthing and mooring of the vessel. Provide free access to the wharf for maritime services of the N/M Bella Desgagnés operated by Relais Nordik.
- .2 For the 2021 schedule of maritime services as well as the arrival and departure planned at La Romaine wharf, visit www.relaisnordik.com.
- .3 For information related to the Relais Nordik operations on the wharf, refer to drawing S01.

1.9 FUEL DELIVERY

- .1 The Contractor is aware that the delivery of fuel from a tanker is performed four (4) times a year, in May, July, September and December.
- .2 Ensure safe navigation, berthing and mooring of the tanker at the wharf, as well as the free circulation on the site to the Harnois employees responsible for the tanker unloading operations.

- .3 Clear the wharf long enough before the arrival of the tanker to allow Harnois staff to prepare the zone for fuel unloading. Contractor must coordinate with the local Harnois representative at La Romaine and conform to its directives. Contractor can continue its work when Harnois only operations are over or under the authorization of the Harnois local representative.
- .4 Contractor must respect its reserved zones and let enough room to allow full deployment of the flexible hose from the ship to the connection station.
- .5 Contractor must communicate with M. Jean-Patrick Brisson, head of Harnois de la Côte-Nord (cellulaire: 418-409-7678) about its fuel needs during the works.
- .6 Complementary information about fuel delivery is specified on plan S01.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

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

1.2 APPOINTMENT AND PAYMENT

- .1 Departmental Representative will appoint and pay for services of testing laboratory except follows:
 - .1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.
 - .2 Inspection and testing performed exclusively for Contractor's convenience.
 - .3 Mill tests and certificates of compliance.
 - .4 Tests specified to be carried out by Contractor under supervision of Departmental Representative.
 - .5 Additional tests specified in clause 1.2.2.
- .2 Where tests or inspections by designated testing laboratory reveal Work not in accordance with contract requirements, pay costs for additional tests or inspections as required by Departmental Representative to verify acceptability of corrected work.

1.3 CONTRACTOR'S RESPONSIBILITIES

- .1 Provide labour, equipment and facilities to :
 - .1 Provide access to Work for inspection and testing.
 - .2 Facilitate inspections and tests.
 - .3 Make good Work disturbed by inspection and test.
 - .4 Provide storage on site for laboratory's exclusive use to store equipment and cure test samples.
- .2 Notify Departmental Representative 48 hours minimum in advance of operations to allow for assignment of laboratory personnel and scheduling of test.
- .3 Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.
- .4 Pay costs for uncovering and making good Work that is covered before required inspection or testing is completed and approved by Departmental Representative.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Not used.

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 another 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 Contractor shall commence work immediately after receiving notice of acceptance of offer.
- .2 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.
- .3 Plan to complete Work in accordance with prescribed milestones and time frame.
- .4 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

- .5 The Contractor is responsible for planning all his work and deadlines taking into account the continuity of the services he must provide and other directions as specified in Section 01 14 00 – Work Restrictions.
- .6 Where it is foreseeable that the deadlines or work completion date will not be met, the Contractor shall, and at no additional cost to the Departmental Representative, take one or more of the following measures: increase labour, increase working time or take other actions to eliminate the backlog of work

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .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.
- .3 Submit Project Schedule to Departmental Representative within 5 working days of receipt of acceptance of Master Plan.
- .4 The Contractor is responsible for the information required to develop the Project Schedule. The Contractor must provide to the Departmental Representative information concerning the work operations, the sequence of work, the breakdown of work into activities and the duration of these activities.
- .5 Project Schedules are subject to acceptance by the Departmental Representative. The Departmental Representative may require additional schedules or reports to demonstrate on-time completion of work or any other project deadline or indication of unrealistic performance.
- .6 The approval of the execution schedules by the Departmental Representative in no way releases the Contractor from its obligation to complete the work according to the contractual documents. Acceptance by the Departmental Representative of submitted timelines does not make the Departmental Representative responsible for any time or cost overruns resulting from schedule delays.
- .7 The Project Schedule and its updates are submitted to the Departmental Representative for review with each payment request as a condition for processing the payment request.
- .8 The Departmental Representative and the Contractor must review the updated work schedule at each meeting. The Contractor must revise the schedule to incorporate the changes made during progress meetings.

1.5 PROJECT MILESTONES

- .1 Project milestones form interim targets for Project Schedule.
 - .1 Work must be carried out considering the following constraints, but limited to:
 - .1 No operations interruption is permitted. Wharf must be left free for loading and unloading operations of Relais Nordik.

- .2 The Contractor must coordinate with the local Harnois representative in La Romaine and comply with his directives when delivering petroleum products. The Contractor may resume work once the Harnois operations have been completed or following the authorization of the local Harnois representative.
- .3 There must be no exclusion zone on the wharf, as described in section 01 14 00 – Work restrictions, during operations. The Contractor must cease activities likely to create an exclusion zone on the wharf surface sufficiently in advance not to interfere with the operations of Relais Nordik or Harnois.
- .2 Contractor is advised that the delivery of the new fenders can take a long time. Work can be planned with an interruption and a second mobilization on the site may be required.
- .3 All work must be completed before December 1, 2021.

1.6 MASTER PLAN

- .1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).
- .2 Departmental Representative will review and return revised schedules within 5 working days.
- .3 Revise impractical schedule and resubmit within 5 working days.
- .4 Accepted revised schedule will become Master Plan and be used as baseline for updates.

1.7 PROJECT SCHEDULE

- .1 Develop detailed Project Schedule derived from Master Plan.
- .2 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:
 - .1 Award.
 - .2 Preparation and approval of the safety program and contingency plan.
 - .3 Execution of field measurements and surveys.
 - .4 Shop Drawings, Samples.
 - .5 Ordering, fabrication, shipping and delivery of materials and structural elements.
 - .6 Ordering, fabrication, shipping and delivery of materials and structural elements with long delivery, such as fenders.
 - .7 Permits.
 - .8 Mobilization.
 - .9 Fenders work.
 - .10 H-piles repairs
 - .11 Wales work

- .12 Cathodic protection work
- .13 Access opening door repair.
- .14 Steel sheet piles repairs.
- .15 Mooring bollard base repairs.
- .16 Addition of ladder rungs to the service ladders.
- .17 Cleaning and overhaul of the site.
- .18 Demobilization.

1.8 PROJECT SCHEDULE REPORTING

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

1.9 PROJECT MEETINGS

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

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 NOT USED

- .1 Not used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Not used.

1.2 REFERENCE STANDARDS

- .1 Not used.

1.3 ADMINISTRATIVE

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

1.4 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 Submit drawings stamped and signed by professional engineer registered or licensed in Province au Quebec, Canada.

- .3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .4 Allow 7 days for Departmental Representative's review of each submission.
- .5 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .6 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
- .7 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 shop drawing, product data and sample.
 - .5 Other pertinent data.
- .8 Submissions include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .5 Details of appropriate portions of Work as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
 - .3 Setting or erection details.
 - .4 Performance characteristics.
 - .5 Standards.
 - .6 Operating weight.
 - .7 Relationship to adjacent work.

- .9 After Departmental Representative's review, distribute copies.
- .10 Submit one electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.
- .11 Submit 1 electronic copy of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.
- .12 Submit 1 electronic copy of test reports for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
- .13 Submit 1 electronic copy of certificates for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
 - .2 Certificates must be dated after award of project contract complete with project name.
- .14 Submit 1 electronic copy of manufacturers instructions for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Pre-printed material describing installation of product, system or material, including special notices and Safety Data Sheets concerning impedances, hazards and safety precautions.
- .15 Submit 1 electronic copy of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.
- .16 Submit 1 electronic copy of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.
- .17 Delete information not applicable to project.
- .18 Supplement standard information to provide details applicable to project.
- .19 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- .20 The review of shop drawings by Departmental Representative is for sole purpose of ascertaining conformance with general concept.
 - .1 This review shall not mean that Departmental Representative approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.

- .2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

1.5 SAMPLES

- .1 Submit for review samples in triplicate as requested in respective specification Sections. Label samples with origin and intended use.
- .2 Deliver samples prepaid to Departmental Representative's business address.
- .3 Notify Departmental Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.
- .4 Where colour, pattern or texture is criterion, submit full range of samples.
- .5 Adjustments made on samples by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .6 Make changes in samples which Departmental Representative may require, consistent with Contract Documents.
- .7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.6 MOCK-UPS

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

1.7 PHOTOGRAPHIC DOCUMENTATION

- .1 Submit electronic copy of colour digital photography in jpg high resolution monthly with progress statement.
- .2 Project identification: name and number of project and date of exposure indicated.
- .3 Number of viewpoints: 8 locations.
 - .1 Viewpoints and their location as determined by Departmental Representative.
- .4 Frequency of photographic documentation: monthly or as directed by Departmental Representative.

1.8 CERTIFICATES AND TRANSCRIPTS

- .1 Immediately after award of Contract, submit documents required by the Commission des normes de l'équité de la santé et de la sécurité au travail.
- .2 Contractor must:
 - .1 Submit the manufacturer's certificates to the Departmental Representative, when specified in the sections of the specifications.
 - .2 Indicate that the material or product meets or exceeds the requirements. Submit product reference data sheets, "affidavits" and appropriate certificates attesting to product compliance.

- .3 Recent or past certificates or product tests may be submitted, but must be approved by the Departmental Representative.

1.9 PRODUCT DATA SHEETS

.1 Contractor must:

- .1 Submit the required number of copies for his part as well as one (1) electronic copy to the Departmental Representative.
- .2 Provide for each copy of the applicable product, the model, options and other specifications. Provide additional information obtained from the manufacturer applicable to this project

1.10 NOT USED

.1 Not Used.

Part 2 Execution

2.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDE

- .1 The Contractor shall manage his activities so that the health and safety of the public and personnel on site, and the protection of the environment always have precedence over issues related to the cost and schedule of work.

1.2 REFERENCES

- .1 Canadian Standards Association (CSA).
- .2 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
- .3 Workplace Hazardous Materials Information System (WHMIS)/Health Canada.
 - .1 Materials safety data sheets (MSDS).
- .4 An Act Respecting Occupational Health and Safety, L.R.Q. Chap. S-2.1 (current edition).
- .5 Safety Code for the construction industry, S-2.1, r.4.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 – Submittal Procedures.
- .2 At least three (3) weeks prior to the mobilization of the workforce, forward to the Departmental Representative, the CNESST and ASP Construction (Association paritaire en santé et sécurité du secteur de la construction) the site-specific prevention program described in section 1.8. The Departmental Representative will review the health and safety plan prepared by the Contractor for the construction site and will provide observations within seven (7) working days of the receipt of this document. If necessary, the Contractor will revise the health and safety plan and resubmit to the Departmental Representative within three (3) business days after receipt of the observations.
- .3 Departmental Representative's review of Contractor's final Health and Safety plan should not be construed as an approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .4 Submit to Departmental Representative the worksite/workplace inspection sheet, duly completed at intervals indicated in article 1.12.1.
- .5 Submit to Departmental Representative within 24 hours one copy of any inspection report, correction notice or recommendation issued by federal or provincial inspectors.
- .6 Submit to Departmental Representative within 24 hours an investigation report for any accident involving injury and any incident exposing a potential hazard.
- .7 Submit to Departmental Representative all material safety data sheets for controlled products to be used at the worksite/workplace at least three (3) days before they are to be used on the worksite/workplace.

- .8 Submit to Departmental Representative copies of the training certificates required toward the application of the safety program, namely:
 - .1 General construction site safety and health courses;
 - .2 First aid in the workplace and cardiopulmonary resuscitation;
 - .3 Training certification in professional diving;
 - .4 Work in confined spaces;
 - .5 Lockout procedures;
 - .6 Any other training called for by regulation or the safety program.
- .9 Medical examinations: where legislation, regulations, directions, specifications or a safety program require medical examinations, the Contractor shall:
 - .1 Prior to mobilization, submit to Departmental Representative the certificates of medical examination for all concerned supervisory staff and employees who will be on duty when the worksite/workplace opens.
 - .2 Thereafter, submit without delay certificates of medical examination for any newcomers to the worksite/workplace who are designated in the first paragraph of this article.
- .10 The emergency plan, as defined in article 1.8.3 - Safety and Health Management, shall be submitted to Departmental Representative at the same time as the site-specific safety program.
- .11 Notice of site opening: Notice of site opening shall be submitted to the Commission de la santé et de la sécurité du travail (CNESST - Québec) before work begins. A copy of such notice shall be submitted to Departmental Representative at the same time and another posted in full view on the worksite. At demobilization, a notice of site closing shall be forwarded to CNESST, with copy to Departmental Representative.
- .12 Engineering plans and certificates of compliance: the Contractor shall provide the CNESST and the Departmental Representative with a copy of all plans and certificates of compliance signed and sealed by an engineer as required in the Construction Safety Code (S-2.1, r. 6) or by any other legislation or regulation or by any other clause in the specifications or in this contract. A copy of these documents must be on hand at the site at all times.
- .13 Certificate of compliance delivered by CNESST: The certificate of compliance is a document delivered by CNESST certifying that the Contractor is in good standing with CNESST, i.e., that he has paid out all the benefits concerning any given contract. This document must be provided to Departmental Representative at work completion.

1.4 SAFETY ASSESSMENT

- .1 The Contractor must identify all hazards inherent to each task to be carried out at the site.
- .2 The contractor must plan and organize work so as to eliminate hazards at the source or promote mutual protection so that reliance on individual protective gear can be kept to a minimum. Where individual protection against falls is required, workers shall use a safety harness that meets CAN/CSA-Z-259.10-M90 requirements. Safety belts shall not be used as protection against falls.

- .3 Equipment, tools and protective gear which cannot be installed, fitted or used without compromising the health or safety of workers or the public shall be deemed inadequate for the work at hand.
- .4 All mechanical equipment shall be inspected before delivery to the work site. Before using any mechanical equipment, submit to Departmental Representative a certificate of compliance signed by a qualified mechanic. Whenever he suspects a defect or the risk of an accident, the Departmental Representative may order the immediate shut-down of equipment and require a new inspection by a specialist of his own choosing.
- .5 For any use of hoisting equipment to lift persons or materials, ensure that the inspections required by applicable regulations made and be able to submit a copy of the inspection certificate upon request by the Departmental Representative.

1.5 MEETINGS

- .1 A Contractor's representative who has decisional ability must attend all meetings at which site safety and health issues are to be discussed.
- .2 The Contractor shall set up a site safety committee, and convene meetings in accordance with the Construction Safety Code.

1.6 REGULATORY REQUIREMENTS

- .1 Comply with all legislation, regulations and standards applicable to the Work at hand.
- .2 Comply with specified standards and regulations to ensure safe operations on sites contaminated with hazardous or toxic materials.
- .3 Regardless of the publication date shown in the construction safety code, always use the most recent version applicable.

1.7 PROJECT/SITE CONDITIONS

- .1 The personnel in charge of construction activities on the work site will be exposed to the following elements which must be factored in the Contractor's safety plan:
 - .1 Work in the vicinity of a water body;
 - .2 Work on piles in a cluttered environment;
 - .3 Work on piles in confined spaces;
 - .4 Diving work in a cluttered environment, in confined spaces;
 - .5 Continued port operations, including those related to the N/M Bella Desgagnés, to the garage and those related to the delivery of petroleum products.

1.8 GENERAL REQUIREMENTS

- .1 Write a site-specific health and safety plan, based on the prior risk / danger assessment, before starting the work. Implement this plan and ensure it is respected until the demobilization of all workers. The health and safety plan must take into account the specifics of the project.

- .2 The Departmental Representative may provide written comments if the plan contains anomalies or raises concerns, and may require the submission of a revised plan that will correct these anomalies or eliminate these concerns.

1.9 HEALTH AND SAFETY MANAGEMENT

- .1 Acknowledge and assume all the tasks and obligations which customarily devolve upon a Head Contractor under the terms of the Act Respecting Occupational Health and Safety (R.S.Q., chapter S-2.1) and the Construction Safety Code (S-2.1, r.4).
- .2 The Contractor shall prepare a specific worksite/workplace safety program based on hazard identification and apply it from the start of project until close-out is completed. The safety plan must take into account the information provided in article 1.7. It must be distributed to all persons concerned as required in article 1.3. At minimum, the safety program shall include:
 - .1 Company safety and health policy;
 - .2 A description of the work, total costs, schedule and projected workforce curve;
 - .3 Flow chart of safety and health responsibility;
 - .4 The physical and material layout of the site;
 - .5 First-aid and first-line treatment standards;
 - .6 Identification of site-specific hazards;
 - .7 Risk assessment for the tasks to be carried out, including preventive measures and the procedures for applying them;
 - .8 Training requirements;
 - .9 Procedures in case of accident/injury;
 - .10 Written commitment from all parties to comply with the prevention program;
 - .11 A site inspection schedule based on the preventive measures.
- .3 Contractor must draw up an effective emergency plan based on the characteristics and constraints of the site and its surroundings. Submit the emergency plan to all parties concerned, pursuant to the provisions of article 1.3. The emergency plan must include:
 - .1 Evacuation procedure;
 - .2 Identification of respondents (police, firefighters, ambulance services, etc.);
 - .3 Identification of persons in charge at the site;
 - .4 Identification of first-aid attendants;
 - .5 Training required for those responsible for applying the plan;
 - .6 Any other information needed, in the light of the site characteristics.

1.10 RESPONSIBILITY

- .1 No matter the size of the construction site or how many workers are present at the workplace, designate one (1) qualified person to supervise and take responsibility for health and safety. Take all necessary measures to ensure the health and safety of persons and property at or in the immediate vicinity of the site and likely to be affected by any of the work.
- .2 Take all necessary measures to ensure application of and compliance with the safety and health requirements of the contract documents, federal and provincial regulations and applicable standards as well as the site-specific safety program, complying without delay with any order or correction notice issued by CNESST.
- .3 Take all necessary measures to keep the site clean and in good order throughout the course of the work.

1.11 COMMUNICATIONS AND POSTING

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

1.12 UNFORESEEN HAZARDS

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

1.13 WORKPLACE INSPECTION AND CORRECTION OF HAZARDOUS SITUATIONS

- .1 Proceed to inspection of worksite and fill the worksite inspection schedule at least once a week.
- .2 Immediately take all necessary measures to correct any lapses from legislative or regulatory requirements and any hazards identified by a government inspector, by the Departmental Representative, by the site safety and health coordinator or during routine inspections.
- .3 Submit to Departmental Representative written confirmation of all measures taken to correct lapses and hazardous situations.
- .4 Work interruption: Give the safety officer or, where there is no safety officer, the person assigned to safety and health responsibilities, full authority to order interruption and resuming of work as and when deemed necessary or desirable in the interests of safety and health. This person should always act so that the safety and health of the public and site workers and environmental protection take precedence over cost and scheduling considerations.
- .5 Without limiting the scope of sections 1.8 and 1.9, the Departmental Representative may order cessation of work if, in his/her view, there is any hazard or threat to the safety or health of site personnel or the public or to the environment.

1.14 BLASTING

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

1.15 POWDER ACTUATED DEVICES

- .1 Use powder actuated devices only after receipt of written permission from Departmental Representative.
- .2 Any person using a power fastener must hold a training certificate and comply with all the requirements of section 7 of the Safety Code for the construction industry (S-2.1, r.4).
- .3 Any other such device must be used according to manufacturer's instructions and applicable standards and regulations.

1.16 HOT WORK

- .1 Hot work: means work and activities where a flame is used or sparks are produced such as in welding, cutting, riveting, drilling, grinding, burning and heating.
- .2 Before beginning work, receive from the wharfinger, who is responsible for the place of work, the "hot-work permit" where work involves hot work. A permit must be issued for each work shift. Refer to the attached form in Appendix B.
- .3 Similarly, make sure before starting work on the absence of any trace of oil in water.
- .4 Keep one (1) hand extinguisher in working order and adequate for the risk at hand in the work area within 5 m of any flame, sparks or intense heat.

- .5 Designate a person to make the round (fire) for a minimum period of 60 minutes after the end of the work shift. This person shall countersign the permit and give it back to the person for the place of work (or his representative) after the 60-minute period.
- .6 The storage of propane cylinders must comply with CAN/CSA-B149.2, Propane Storage & Handling Code, in addition to meeting the specific conditions set out in this document. Cylinders must be stored outdoors in a safe place, free from tampering, in a storage cabinet designed for this purpose, held securely upright and locked at all times, where there is no movement of vehicles unless protected by barriers or equivalent measures.
- .7 All propane cylinders used or stored on construction sites shall be provided with a collar designed to protect the valve.
- .8 The filling of propane cylinders on site is prohibited unless the procedure is compliant with CAN / CSA B149.2 and approved and authorized by Departmental Representative.

1.17 WELDING AND CUTTING

- .1 Welding and cutting must be executed in accordance with article « 3.13. Supply of compressed gas » and « 3.14. Welding and Cutting » of the Safety Code for the Construction Industry, S-2.1, r.6.
- .2 Welding and cutting devices are extreme fire hazards on construction sites. The following precautions should be taken in this type of work:
 - .1 Store compressed gas cylinders on a fireproof surface and make sure the area is well ventilated.
 - .2 Store all oxygen cylinders at minimum distance of 6 meters from flammable gas cylinders (i.e., acetylene) or combustible materials such as oil or grease, unless separated by a non-combustible partition as specified in Article 3.13.4. Safety Code for the Construction Industry, S-2.1, r.6.
 - .3 Install fireproof canvas where welding works are superimposed and where there is a risk of falling sparks.
 - .4 Store all cylinders away from any heat sources.
 - .5 Do not put acetylene in contact with metals such as silver, mercury, copper, and brass alloys containing more than 65% copper, to avoid the risk of an explosive reaction.
 - .6 Ascertain that arc welding equipment is supplied with the required voltage and is grounded.
 - .7 Ascertain that arc welding wire conductors are not damaged.
 - .8 Place welding equipment on level ground and sheltered from weather conditions.
 - .9 Move away or cover combustible materials that may be near the welding set-up.
 - .10 Do not weld or cut any closed container.
 - .11 Provide protection measures when welding or cutting is performed near piping, tanks or other containers of flammable materials.

- .12 Do not make any cutting, welding or any open flame work on a container, tank, pipe or other container that may contain flammable or explosive substance unless:
 - .1 Air samples were collected indicating that the job can be carried out safely, or
 - .2 Measures have been taken to ensure the safety of workers.

1.18 HOISTING OF MATERIALS

- .1 Locate lifting equipment in such way that loads do not travel over the heads of workers, of occupants and the public, and that loads comply with the load restrictions on the wharf.
- .2 Forward to the Departmental Representative a working procedure, including among others the position of the crane, the mast length and maximum weight of loads to be handled.
- .3 All mobile cranes manufactured after 1 January 1980 must be fitted with an overload protection device.
- .4 All mobile cranes with cables, except where used for other ends than lifting loads, must be provided with a safety device against twoblocking.
- .5 The Contractor shall provide the Departmental Representative with a mechanical service inspection certificate for each lifting device. Inspections must be carried out just prior to the delivery of the equipment to the work site.
- .6 In addition to the mechanical service inspection certificate, the annual inspection certificate and the crane logbook must be aboard all crane and crane-truck cabs.
- .7 The entire lifting area shall be closed off to prevent non-authorized people from entering.
- .8 Make a thorough inspection of all slings and lifting accessories to ensure that material in poor condition is destroyed and disposed of.
- .9 Lift compressed gas cylinders with a basket specially designed for this purpose.

1.19 SCAFFOLDING

- .1 Foundation
 - .1 Scaffolding shall be installed on a solid foundation so that it does not slip or rock.
- .2 Assembly, bracing and mooring:
 - .1 All scaffolding shall be assembled, braced and moored in accordance with the Manufacturer's instructions and the provisions of the Safety Code for the construction industry.
 - .2 Where a situation requires the removal of part of the scaffolding (e.g., crosspieces), the Contractor shall submit an assembly procedure signed and sealed by an engineer certifying that the scaffolding assembled in that manner will allow the work to be done safely given the loads to which it will be subject.

- .3 For scaffolding where the span between two supports is greater than 3 m, the Contractor shall provide an assembly plan signed and sealed by an engineer.
- .3 Platforms:
 - .1 Scaffolding platforms shall be designed and installed in accordance with the provisions of the Safety Code for the construction industry.
 - .2 If planks are used, they shall be approved and stamped in accordance with section 3.9.8 of the Safety Code for the construction industry (current edition).
 - .3 The platforms shall cover the entire surface protected by the guardrails.
 - .4 Notwithstanding the above, scaffolding 4 sections (or 6 m) high or higher shall have a full platform covering the entire surface of the putlogs every 3 m or fraction thereof, and the components of that platform shall not be moved at any time to create an intermediate landing.
- .4 Guardrails:
 - .1 A guardrail shall be installed on every landing.
 - .2 Cross braces are not considered guardrails.
 - .3 Where scaffolding 4 sections (or 6 m) high or higher requiring full platforms is used, guardrails shall be installed on each landing at the start of work and shall remain in place until the work is completed.
- .5 Access:
 - .1 The Contractor shall ensure that access to the scaffolding does not compromise worker safety.
 - .2 Where the platforms of the scaffolding are comprised of planks, ladders shall be installed in such a way that planks extending beyond the platform do not block the way up or down.
 - .3 Notwithstanding the provisions of the Safety Code for the construction industry, stairs shall be installed on all scaffolding that has 6 or more rows of uprights or is 6 sections (or 9 m) high or higher.
- .6 Protection of the public and occupants:
 - .1 The Contractor shall identify the boundaries of and barricade the work area so as to limit access to authorized workers only.

1.20 WORK IN THE VICINITY OF A WATER BODY

- .1 The following requirements shall be met for work involving drowning risks:
 - .1 In all work carried out water the Contractor shall comply with the following requirements in addition to article 2.10.13 of the Safety Code for the construction industry.
 - .2 Wherever possible, the Contractor shall plan his work so as to implement safety measures to prevent any worker from falling into the water. The use of such security measures should be preferred to wearing a life jacket.

- .3 Wear a life jacket or buoyancy device to maintain the user's head above water and to float effortlessly.
- .4 Submit to CNESST and to the Departmental Representative the following documents before work begins:
 - .1 Work related information (work dates, location, water body, description of work, etc.);
 - .2 The list of vessels and working platforms used during the work, specifying their respective use;
 - .3 Evidence that an evaluation and inspection were conducted by Transport Canada for each boat, motorized platform, or non self-propelled platform;
 - .4 A transportation plan on water for workers (where applicable);
 - .5 A rescue plan specific to this work with the following information and ensuring that all workers affected have received the training and information needed to apply the plan:
 - .1 A complete description of the procedures, including the responsibilities of persons who are allowed access to the workplace;
 - .2 The location of the emergency equipment.
- .5 The Contractor shall be able to demonstrate that the operators of each craft has the knowledge and skills required to perform their duties safely.
- .6 Ensure that a rescue vessel is moored to the wharf and available at all times within thirty (30) meters of the workers.

1.21 DIVING WORK

- .1 Comply with all requirements of the regulations on salubrity and safety (S-2.1, r.19.1), and specifically to section XXVI.I, work performed underwater. Comply also with the requirements of CSA Z275.2 - Occupational safety code for diving operations, CSA Z275.1 - Hyperbaric Facilities, and CSA Z275.4 - Competency standard for diving, hyperbaric chamber, and remotely operated vehicle operations (current editions). In case of discrepancies among requirements, comply with the most stringent provision.
- .2 In addition to the previous paragraph, where of construction work is performed, comply with the Safety Code for the construction industry (S-2.1, r.4).
- .3 Before work is undertaken, submit the following documents to the Departmental Representative in keeping with the content required in the occupational health and safety regulations:
 - .1 The training certificate in professional diving of every member of the dive team, or the document certifying recognition of the skills of these people to CAN/CSA Z 275.4 (Competency standard for diving, hyperbaric chamber, and remotely operated vehicle operations) in accordance with article 312.8 of this regulation;
 - .2 The workplace first aid training certificate of every member of the dive team;
 - .3 The medical certificate of each member of the dive team;

- .4 For each dive under this project, a dive plan as required by the occupational health and safety regulations;
- .5 A notice confirming that a communication system with the medical emergency service for diving emergencies is available at all times at the diving station.
- .4 Before work begins, carry out a simulation of the rescue procedure at the site as required in section 312.31 of the occupational health and safety regulation.
- .5 Submit to Departmental Representative the filled daily checklist confirming the presence and condition of the equipment required at the dive site in the dive plan.
- .6 Ensure that all other documents required in section XXVI of the occupational health and safety regulation are available at all times on the site (dive record, diver logbook, etc.).
- .7 Comply with the requirements of sections 355 to 357 of the occupational health and safety regulation for all people assigned to this project and who remain at the surface.
- .8 The Contractor shall consider the following features on the work site and adjust the contents of his dive plan accordingly:
 - .1 Presence of an impressed current cathodic protection system on the site. It is therefore necessary to provide a lockout procedure for these special conditions.
 - .2 With respect to the work carried out inside the wharf (service void), the Contractor shall be consider that they will be undertaken in enclosed and cluttered space conditions.
- .9 If the diving station is more than two (2) metres above the water, forward the following to the Departmental Representative
 - .1 The plan of the equipment used to get the worker in the water if a platform is not used as a launching means;
 - .2 The plan of the equipment used to lift the platform or the other device unless the equipment is a crane or a boom truck.
- .10 If diving is done from a boat, provide the Departmental Representative with the following documents:
 - .1 Evidence of the qualification of the boat operator;
 - .2 The boat's certificate of conformity issued by Transport Canada.

1.22 WORK IN THE WHARF SERVICE SPACE

- .1 In addition to meeting provincial requirements that apply to enclosed spaces, the Contractor shall further comply with the requirements set out in the following paragraphs. The Contractor must first develop a second access as shown on the drawings in addition to the existing access to create an emergency exit should the existing access become impracticable during construction.
- .2 The Departmental Representative reserves the right, based on the Contractor's level of competency with confined spaces, to require the latter to hire the services of a firm specialized in health and safety, or in enclosed spaces, to analyse the risks inherent to confined spaces, to fill the entry permit, to perform work supervision, or for any other activity related to work in confined spaces.

- .3 The Contractor shall designate a person responsible for health and safety working in confined spaces. This person must be a qualified as defined in section 297 of the Regulation respecting occupational health and safety (S-2.1, r.13). The person must be present at all times during work in confined spaces and ensure that all regulatory requirements and the requirements of this section are met. The designated person must include fill and issue the enclosed space entry permit.
- .4 Mandatory training:
 - .1 All persons having access to an enclosed space, as well as the responsible person and the confined space supervisor, the must be trained on the entry into enclosed areas.
 - .2 All persons who have to use a self-contained breathing apparatus for confined space entry should be trained on the use of such devices.
 - .3 All persons identified as respondents for confined spaces emergencies must be trained on rescue in confined spaces.
 - .4 Each training required in the above paragraphs must be given by a firm specialized in health and safety or in enclosed spaces.
 - .5 The training certificates of those listed above must be forwarded to the Departmental Representative before the start of work in confined areas.
- .5 Risk assessment within the wharf (crawl space).
 - .1 The Contractor shall conduct an assessment of the risks inherent and related to confined spaces, including:
 - .1 The prevailing internal atmosphere, namely the concentration of oxygen, flammable gases and vapors;
 - .2 Availability of natural ventilation;
 - .3 Cubic measurement or footprint and the possible presence of debris and construction materials on the seabed;
 - .4 The variation in water depths;
 - .5 Any other special conditions.
 - .2 The risk assessment must be performed and signed by the person responsible for health and safety work in confined spaces. The report must be forwarded to the Departmental Representative for review at least ten (10) days before the date set for work in confined areas.
- .6 Contractor shall forward to the Departmental Representative for review at least five (5) days before the date set for work inside the wharf, a copy of the entry permit. The entry permit must be completed by the person responsible for health and safety working in confined spaces, and include the following information:
 - .1 Description of the work to be executed and the method of work, including the equipment and tools required to perform the work;

- .2 Description of the risks and corresponding control measures, based on the results of the risk assessment inherent to the confined space and based on the risks involved in the work to be performed;
- .3 Safety equipment used to control the risks in enclosed spaces (i.e., fans, gas detecting device, local ventilation, personal protective equipment, etc.);
- .4 Rescue procedure containing at least the following elements:
 - .1 Means of communication between the supervisor of the confined area and the workers inside the confined space;
 - .2 Rescue equipment specific to each confined space;
 - .3 Confirmation that the municipal emergency department has been notified of the work in confined spaces specifically on this site and can respond to a rescue in a confined space; otherwise the Contractor shall identify workers on site who will act as rescuers should there be a need to access the inside of the enclosed area (mandatory rescue training);
 - .4 Location of the telephone, and telephone number of the municipal emergency service (where applicable);
- .5 Date of entry permit;
- .6 Name of person issuing the permit and name of this person's employer;
- .7 Name of supervisor and name of this person's employer;
- .8 Names of workers who must enter the confined space and name of each of their employers.
- .7 The Contractor shall forward to the Departmental Representative a medical certificate dated within two years for all persons using a supplied-air respirator. The certificates should confirm the fitness of each person to use this kind of device.
- .8 Requirements for work in confined spaces.
 - .1 Before each entry in an enclosed area, the responsible person must take measurements of oxygen concentration, of flammable gases, and all toxic gases likely to be found, and record the results of these measurements on the entry permit. These measures must be taken at various places under the dock (in corners and other places where the air can be stagnant).
 - .2 No worker may enter a confined area if the following requirements are not complied with:
 - .1 Oxygen concentration must be greater than or equal to 19.5%, and less than or equal to 23 %;
 - .2 The concentration of flammable gases or vapors must be less than or equal to 10 % of the lower explosive limit (LEL);
 - .3 The concentration of other gases must not exceed the standards referenced in Schedule I of the Regulation respecting occupational health and safety (S-2.1, r.13).

- .3 Where the measured concentrations of oxygen and gas remain within the regulatory values, the person responsible must ensure that all preventive measures indicated on the permit are in place and must finish completing the entry permit (date, time, signatures, etc.) before issuing the permit and allowing access to the confined area.

An entry permit should only cover one (1) work shift; the Contractor shall issue a new permit for each additional work shift.

- .4 During work within the confined area, gas concentrations must be measured continuously and the detecting device installed at the workers' breathing zone level. If the prevailing conditions inside the confined space are such that workers could not hear or see the alarm, the Contractor must find a way for the supervisor of the enclosed space to monitor concentration measurements while maintaining measurements in the workers' breathing zone.

Where the work is organized in such way that the workers are distant from each other in an enclosed area of large dimensions, the Contractor shall provide for additional gas detectors.

- .5 The Contractor shall provide gas detectors and maintain them in good working condition. He must be able to demonstrate that the gas detectors used have been calibrated and adjusted by the responsible person or by a qualified person according to the manufacturer's recommendations. The Departmental Representative may at all times verify the accuracy of the Contractor's equipment. In case of failure of a detection device, the work must immediately be suspended and all workers must leave the enclosed area.

The manufacturer's Instruction Manual for the gas detector must be available on site.

- .6 At the entrance to an enclosed space and during the performance of work in conditions free from diving, the Contractor shall proceed continuously without interruption to mechanical ventilation for forty-eight (48) hours before allowing the access under the dock. The ventilation system must be of sufficient capacity to maintain concentrations of contaminants below regulatory concentration limits.

- .7 If the alarm of a gas detector is triggered, all workers must leave the enclosed area. The concentration readings must then be recorded on the entry permit. The Contractor must identify and neutralize the source of contamination, ventilate the confined area to remove any contaminant residues and allow access to the confined space when the oxygen and gas concentrations have returned to normal.

- .8 No compressed gas cylinder or welding machine must be brought within confined spaces: this equipment must stay outside and must not block the access to or exit from the confined areas; all cylinders must be properly secured.

- .9 Electrical tools and equipment used for work in confined spaces should be grounded and, where necessary, explosion-proof. All equipment must be connected to a ground fault circuit interrupter (GFCI) or a step down transformer. The Contractor shall, at own expense, have a qualified electrician change the electrical outlets and/or circuit breakers he intends to use which do not meet these criteria.
- .10 Where hot work is required, the Contractor shall obtain a hot work permit and comply with the requirements specified in article 1.15 of this section.
- .11 The Contractor shall assign a qualified person to assume the supervision. The supervisor should be assigned exclusively to these functions and must remain outside the confined space as long as workers remains inside the confined area. In addition, the supervisor shall:
 - .1 Check that the entry permit is completed, signed and posted next to the confined area;
 - .2 Be knowledgeable of the specific working procedures in enclosed spaces and ensure that they are complied with;
 - .3 Ensure ongoing communication with all workers in the confined area;
 - .4 Ascertain that the necessary emergency equipment is in place;
 - .5 Be knowledgeable of booster fan systems and ensure proper operation for the duration of the work, as applicable;
 - .6 Prevent access to unauthorized persons;
 - .7 Ensure that conditions surrounding the area the confined spaces do not affect the health and safety of workers within.
 - .8 Trigger the emergency procedure as needed.
- .12 The same person may assume the monitoring functions and that of the person responsible for health and safety working in confined spaces, subject to complying with all the requirements of both functions.

1.23 LOCKOUT PROCEDURES

- .1 When work is carried out on electrically supplied equipment or equipment likely to be turned on accidentally, the Contractor shall provide and enforce a written lockout procedure, and submit this procedure to the Departmental Representative.
- .2 The supervising personnel and all workers concerned must have taken the course on lockout techniques offered by ASP Construction or equivalent training from another organization.

1.24 FLOATING MATERIAL

- .1 Mark floating equipment with lights/markers in accordance with the most stringent regulation between:
 - .1 CNESST: Commission de la santé et de la sécurité du travail;

- .2 Canadian Coast Guard regulations;
- .3 International “Rules of the Road”.
- .2 Maintain radio watch on board.
- .3 Place in position and maintain all required buoys/markers throughout contract duration.
- .4 Contractor shall, on an ongoing basis, report accurately all movements of his floating equipment to the Canadian Coast Guard Marine Communications and Traffic Services (SCTM Québec). As well, report to SCTM the start and end hours of all construction periods.
- .5 Provide updates to the Transport Canada local representative for issuance of Notices to Shipping.
- .6 Contractor shall notify the Canadian Coast Guard for the issuance of a navigation notice for the entire duration of works.

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 Not used.

1.2 DEFINITIONS

- .1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humans; or degrade the environment aesthetically, culturally and/or historically.
- .2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Product Data:
 - .1 Submit one electronic copy of WHMIS MSDS in accordance with Section 01 35 29.06 – Health and Safety Requirements.
- .3 Before commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review and approval by Departmental Representative.
- .4 Environmental Protection Plan must include comprehensive overview of known or potential environmental issues to be addressed during construction.
- .5 Address topics at level of detail commensurate with environmental issue and required construction activities.
- .6 Include in Environmental Protection Plan:
 - .1 Name[s] of person[s] responsible for ensuring adherence to Environmental Protection Plan.
 - .2 Work area plan showing proposed activity in each portion of area and identifying areas of work, storage and traffic.
 - .3 Spill Control Plan to include procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
 - .4 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including work debris.
 - .5 Waste Water Management Plan identifying methods and procedures for management and discharge of waste waters which are directly derived from construction activities, such as clean up water used to wash concreting equipment and tools.

1.4 WASTE DISPOSAL

- .1 Burying wastes and waste materials on site is prohibited.
- .2 Fires and burning of rubbish on site is not permitted.
- .3 Disposal of wastes or volatile materials such as mineral spirits and oil or paint thinners into waterways, storm or sanitary sewers is prohibited.

1.5 DRAINAGE

- .1 Ensure pumped water into waterways, sewer or drainage systems is free of suspended materials.
- .2 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

1.6 WORK ADJACENT TO WATERWAYS

- .1 Construction equipment to be operated from the wharf or on land only.
- .2 Waterways to be kept free of excavated fill, waste material and debris. All debris accidentally introduced in the aquatic environment shall be removed without delay.
- .3 Do not skid logs or building materials from one side to the other stream.

1.7 POLLUTION CONTROL

- .1 Maintain temporary erosion and pollution control features installed under this Contract.
- .2 Control emissions from equipment and plant in accordance with local authorities' emission requirements.
- .3 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area.
 - .1 Provide temporary enclosures where directed by Departmental Representative.
- .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris.
- .5 Store and handle carefully hydrocarbons and other hazardous materials used on site (diesel, gasoline, engine and hydraulic oils, lubricants) in a suitable area on the mainland at least 30 metres from the shoreline.
- .6 Use type HF biodegradable oil in equipment and machinery in contact with or operating on water.
- .7 Use clean equipment and machinery in good working condition. Machinery must not show any sign of leaking fuel, oil or grease. Provide upon request of Departmental Representative a mechanical inspection certificate.
- .8 Do not idle machinery engines when not in use.

- .9 The machinery cleaning, maintenance and fueling as well as storage of petroleum products must be done at least 30 m from shore, on a sealed surface or on a containment zone of appropriate volume. These activities must be conducted under continuous supervision and an emergency spill kit has to be nearby.
- .10 Keep machinery away from any body of water, water stream or wetland as soon as it is no longer in use.
- .11 Ensure that machinery that arrive on site is clean, do not leak, free from invasive species and weeds and keep it that way during the entire duration of works.
- .12 The Contractor shall have permanently on hand an emergency petroleum product recovery kit comprised of flotation collars, absorbent pads or collars, drums and related equipment (gloves, etc.) essential to deal with a small-scale spill. This type of kit is available from specialised suppliers and the must be approved by the Departmental Representative.
- .13 The Contractor shall provide the work site personnel with a briefing on recovery methods before starting work.
- .14 In the event of equipment failure, repair the equipment immediately and apply the usual emergency measures to control the situation; the area contaminated by toxic substances will be contained and cleaned and the contaminated material removed and disposed of at a site authorized by MDDELCC (ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatique).
- .15 In the event of an environmental emergency, the Contractor shall take all necessary measures to minimize the impacts, including compliance with MTQ's « Guide sur le transport des matières dangereuses ». The Contractor shall also notify the Departmental Representative as soon as the first steps to minimize environmental impacts have been taken.
- .16 All spills must be declared immediately to the Departmental Representative, to Environment Canada's Emergencies Reporting System (1-866-283-2333), to the ministère de l'Environnement et de la Lutte contre les changements climatiques du Québec (MELCC) (1-866-694-5454) and to the Canadian Coast Guard's alert system in the event of an offshore spill (1-800-363-4735).
- .17 Contractor must have at all time a boat and the necessary equipment (life jackets) to recover any material accidentally released in the marine environment.
- .18 Appropriate work methods must be used to prevent any entry of debris and hazardous products into the aquatic environment. Debris must not be thrown into the water or in the natural environment and any debris that has been accidentally introduced there must be removed as soon as possible and disposed of, in accordance with regulations.
- .19 Regularly carry out a complete cleaning of the aquatic environment to collect all debris from the work.
- .20 Cover dry materials and debris to prevent wind from blowing dust or dragging debris.

- .21 At the end of the work, work areas must be cleared of equipment, machinery parts, demolition materials, waste, rubbish, rubble and cuttings from the work, as quickly as possible. These materials must be managed in sites authorized to receive them according to the applicable regulations and this, for all types of scrap that will be produced as part of the present work.
- .22 Contractor must take the required measures to minimize dust emissions. Use a dust suppressor if necessary to reduce dust emissions.
- .23 Carry out work when weather conditions are favorable. Suspend work when weather conditions deteriorate.
- .24 Wastewaters resulting from, but not limited to, cleaning of equipment used in mixing concrete must not be discharged on site, nor in any body of water.
- .25 Concreting and grouting must be carried out in such a way that these products and the particles they contain are not directly or indirectly in contact with the aquatic environment or the ground.
- .26 Materials that drips or run off from cast-in-place concrete and concrete mixers must be trapped on-site by interception ditches, settling ponds, retention lakes or other facilities. Sediments must be able to settle and reach a neutral pH before the clean water is released into the drainage system or can flow into the soil.

1.8 NOTIFICATION

- .1 It is the Contractor's responsibility to take measures in order to know and comply with laws and regulations applicable to his activities and to obtain permits or recommendations from competent authorities if necessary.
- .2 Departmental Representative will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan.
- .3 Contractor: after receipt of such notice, inform Departmental Representative of proposed corrective action and take such action for approval by Departmental Representative.
 - .1 Take action only after receipt of written approval by Departmental Representative.
- .4 Departmental Representative will issue stop order of work until satisfactory corrective action has been taken.
- .5 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

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 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.
- .3 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 Not used.

1.2 INSPECTION

- .1 Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Place of Work.
- .3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .4 Departmental Representative will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Departmental Representative will pay cost of examination and replacement.

1.3 INDEPENDENT INSPECTION AGENCIES

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

1.4 ACCESS TO WORK

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

1.5 PROCEDURES

- .1 Notify appropriate agency and 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.

1.6 REJECTED WORK

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

1.7 REPORTS

- .1 Submit 4 copies of inspection and test reports to Departmental Representative.
- .2 Provide copies to subcontractor of work being inspected or tested.

1.8 TESTS AND MIX DESIGNS

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

1.9 MOCK-UPS

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

1.10 MILL TESTS

- .1 Submit mill test certificates as requested.

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 Not used.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

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

1.3 INSTALLATION AND REMOVAL

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

1.4 TEMPORARY POWER AND LIGHT

- .1 Provide and pay for temporary power during construction for temporary lighting and operating of power tools.
- .2 Provide and maintain temporary lighting throughout project. Ensure level of illumination on all floors and stairs is not less than 10 lx.
- .3 Contractor will be allowed to tap into the electrical service panel located in the Transport Canada building only for the needs of the site offices. The connection must be performed by a licensed electrician in accordance with the Canadian Electrical Code. Pay all costs of connection and disconnection.
- .4 The electrical installations set up by the Contractor must comply with applicable standards, codes and regulations.

1.5 TEMPORARY COMMUNICATION FACILITIES

- .1 Provide and pay for temporary telephone, fax, Internet link, printers with scanner, hook up lines and equipment necessary for own use and that of the Departmental Representative.

1.6 FIRE PROTECTION

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

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 Not used.

1.2 REFERENCE STANDARDS

- .1 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB 1.189-00, Exterior Alkyd Primer for Wood.
 - .2 CGSB 1.59-97, Alkyd Exterior Gloss Enamel.
- .2 CSA Group (CSA)
 - .1 CSA-A23.1/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
 - .2 CSA-0121-M1978(R2003), Douglas Fir Plywood.
 - .3 CAN/CSA-S269.2-M1987(R2003), Access Scaffolding for Construction Purposes.
 - .4 CAN/CSA-Z321-96(R2001), Signs and Symbols for the Occupational Environment.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

1.4 INSTALLATION AND REMOVAL

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

1.5 SCAFFOLDING

- .1 Scaffolding in accordance with CAN/CSA-S269.2.
- .2 Provide and maintain scaffolding, ladders, platforms and temporary stairs.

1.6 HOISTING

- .1 Provide, operate and maintain hoists and cranes required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for their use of hoists.
- .2 Hoists and cranes to be operated by qualified operator.

1.7 SITE STORAGE/LOADING

- .1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
- .2 Do not load or permit to load any part of Work with weight or force that will endanger Work.
- .3 Make sure that the limits of load authorized on the platform are any time respected.

1.8 CONSTRUCTION PARKING

- .1 Parking will not be permitted on site and within the boundaries of the Transport Canada property.
- .2 Provide and maintain adequate access to project site.
- .3 Clean runways where used by Contractor's equipment.

1.9 SECURITY

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

1.10 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.
- .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 Departmental Representative's Site office.
 - .1 Provide temporary office for Departmental Representative.
 - .2 Inside dimensions minimum 3.6 m long x 3 m wide x 2.4 m high, with floor 0.3 m above grade, complete with 2 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 Equip office with 1 x 2 m table, 4 chairs, 6 m of shelving 300 mm wide, one 3 drawer filing cabinet, one plan rack and one coat rack and shelf.
 - .7 Supply and manage a potable water fountain.
 - .8 Maintain in clean condition.

1.11 EQUIPMENT, TOOL AND MATERIALS STORAGE

- .1 Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.
- .2 Store materials in the reserved areas indicated on the drawings. If the Contractor wishes to use additional storage adjacent to the site, he must make arrangements with the owners and provide a copy of such agreement to the Departmental Representative.
- .3 Leave premises in the original pre-construction condition and forward the owners' certificate of acceptance the Departmental Representative.

1.12 SANITARY FACILITIES

- .1 Provide sanitary facilities, insulated and heated during the cold season, for the workforce and the Departmental Representative in accordance with governing regulations and ordinances and maintain supply of paper towels and toilet tissue.
- .2 Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.
- .3 Canada Transport's permanent facilities may not be used.

1.13 CONSTRUCTION SIGNAGE

- .1 Provide project identification site sign comprising, framing, and one 1200 x 2400 mm signboard as detailed and as described below.
 - .1 Framework and battens: SPF, pressure treated minimum 89 x 89 mm.
 - .2 Signboard: 19 mm Medium Density Overlaid Douglas Fir Plywood to CSA O121.
 - .3 Paint: alkyd enamel to CAN/CGSB-1.59 over exterior alkyd primer to CAN/CGSB 1.189.
 - .4 Fasteners: hot-dip galvanized steel nails and carriage bolts.
 - .5 Vinyl sign face: printed project identification, self adhesive, vinyl film overlay, supplied by Departmental Representative.
- .2 Locate project identification sign as directed by Departmental Representative and construct as follows:
 - .1 Build concrete foundation or concrete blocks, erect framework, and attach signboard to framing.
 - .2 Paint surfaces of signboard and framing with one coat primer and two coats enamel. Colour white on signboard face, black on other surfaces.
 - .3 Apply vinyl sign face overlay to painted signboard face in accordance with installation instruction supplied.
- .3 Direct requests for approval to erect Consultant/Contractor signboard to Departmental Representative. For consideration general appearance of Consultant/Contractor signboard must conform to project identification site sign. Wording in both official languages.

- .4 Signs and notices for safety and instruction in both official languages Graphic symbols to CAN/CSA-Z321.
- .5 Maintain approved signs and notices in good condition for duration of project, and dispose of off site on completion of project or earlier if directed by Departmental Representative.

1.14 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 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: responsible for repair of damage to roads caused by construction operations.
- .7 Lighting: to assure full and clear visibility for full width of haul road and work areas during night work operations.
- .8 Provide snow removal during period of Work.

1.15 CRAFT FOR USE BY THE DEPARTMENTAL REPRESENTATIVE

- .1 Provide the Departmental Representative with a safe boat suitable for site conditions, including a 25-horsepower engine, fuel, life jackets and all the equipment required by the Canadian Coast Guard regulations.
- .2 The craft with operator must be accessible at all times by the Departmental Representative for the duration of the project.
- .3 The Contractor may use the boat for his own purposes after obtaining the Departmental Representative's authorisation.
- .4 In addition to the boat provide upon request by Departmental Representative workers and equipment needed for inspection and supervision of work.

1.16 CLEAN-UP

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

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Not used.

1.2 INSTALLATION AND REMOVAL

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

1.3 GUARD RAILS AND BARRICADES

- .1 Provide secure, rigid guard rails and barricades around Work zone.
- .2 Provide as required by governing authorities and as directed by Departmental Representative.

1.4 SNOW REMOVAL

- .1 For the duration of the contract, during construction, Contractor to proceed to the removal of snow in the areas occupied by the construction. Snow removal in the access road and in the zones beyond the work areas will be provided by Transport Canada.
- .2 The removal and disposal of snow off site must be carried out in compliance with applicable federal, provincial and municipal laws and regulations. Snow cover accumulation or build-up will not be tolerated on the site.

1.5 ACCESS TO SITE

- .1 Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work.

1.6 FIRE ROUTES

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

1.7 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

- .1 Protect surrounding private and public property from damage during performance of Work.
- .2 Be responsible for damage incurred.

1.8 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 19 – 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 Not used.

1.2 REFERENCE STANDARDS

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

1.3 QUALITY

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

1.4 AVAILABILITY

- .1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Departmental Representative of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.
- .2 In event of failure to notify Departmental Representative at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Departmental Representative reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.5 STORAGE, HANDLING AND PROTECTION

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Store cementitious products clear of earth or concrete floors, and away from walls.
- .5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
- .6 Store sheet materials, lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.
- .7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- .8 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.
- .9 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.6 TRANSPORTATION

- .1 Pay costs of transportation of products required in performance of Work.
- .2 Transportation cost of products supplied by Owner will be paid for by Departmental Representative. Unload, handle and store such products.

1.7 MANUFACTURER'S INSTRUCTIONS

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

1.8 QUALITY OF WORK

- .1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Departmental Representative if required Work is such as to make it impractical to produce required results.

- .2 Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.
- .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative, whose decision is final.

1.9 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.

1.10 CONCEALMENT

- .1 Before installation inform Departmental Representative if there is interference. Install as directed by Departmental Representative.

1.11 REMEDIAL WORK

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

1.12 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/or building occupants 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 Not used.

1.2 PROJECT CLEANLINESS

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris.
- .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
- .3 Clear snow and ice from access to building, remove from site.
- .4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .5 Provide on-site containers for collection of waste materials and debris.
- .6 Provide and use marked separate bins for recycling. Refer to Section 01 74 19 – Waste Management and Disposal.
- .7 Dispose of waste materials and debris off site.
- .8 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .9 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .10 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

1.3 FINAL CLEANING

- .1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .3 Prior to final review remove surplus products, tools, construction machinery and equipment.
- .4 Remove waste products and debris including that caused by Owner.
- .5 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
- .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .7 Clean up mooring bollards, wheel guards, protection bollards and electrical cabinets / panels; where necessary, touch up scratches and damages as directed by the Departmental Representative.
- .8 Clean lighting reflectors.

- .9 Clean and grade gravel roads affected by construction activities.
- .10 Broom and clean and wash all exterior paved surfaces affected by the works, and remove stains and marks found by the Departmental Representative's instructions.
- .11 Empty the wharf service space (piles surrounding) from all material or temporary work.

1.4 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for recycling in accordance with Section 01 74 19 – 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 02 41 16.09 – Structure Demolition – Short Form

1.2 DEFINITIONS

- .1 Clean Waste: Untreated and unpainted; not contaminated with oils, solvents, sealants or similar materials.
- .2 Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, re modeling, repair and demolition operations.
- .3 Hazardous: Exhibiting the characteristics of hazardous substances including properties such as ignitability, corrosiveness, toxicity or reactivity.
- .4 Non hazardous: Exhibiting none of the characteristics of hazardous substances, including properties such as ignitability, corrosiveness, toxicity, or reactivity.
- .5 Non toxic: Not poisonous to humans either immediately or after a long period of exposure.
- .6 Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.
- .7 Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.
- .8 Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form; recycling does not include burning, incinerating, or thermally destroying waste.
- .9 Return: To give back reusable items or unused products to vendors for credit.
- .10 Reuse: To reuse a construction waste material in some manner on the project site.
- .11 Salvage: To remove a waste material from the project site to another site for resale or reuse by others.
- .12 Sediment: Soil and other debris that has been eroded and transported by storm or well production run off water.
- .13 Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.
- .14 Toxic: Poisonous to humans either immediately or after a long period of exposure.
- .15 Trash: Any product or material unable to be reused, returned, recycled, or salvaged.
- .16 Volatile Organic Compounds (VOC's): Chemical compounds common in and emitted by many building products over time through outgassing:
 - .1 Solvents in paints and other coatings;
 - .2 Wood preservatives; strippers and household cleaners;

- .3 Adhesives in particleboard, fiberboard, and some plywood; and foam insulation.
- .4 When released, VOC's can contribute to the formation of smog and can cause respiratory tract problems, headaches, eye irritations, nausea, damage to the liver, kidneys, and central nervous system, and possibly cancer.
- .17 Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide required information in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Submit the following prior to issuance of the certificate of substantial achievement:
 - .1 Waste Diversion Report, indicating final quantities in tones, cubic metres or percentage by material types salvaged for reuse, recycling or disposal in landfill and recycling centres, re-use depots, landfills and other waste processors that received waste materials.
 - .2 Provide receipts, scale tickets, waybills, waste disposal receipts that confirm quantities and types of materials reused, recycled or disposed of and destination.

1.4 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 Departmental Representative.

1.5 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.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Storage Requirements: Implement a recycling/reuse program that includes separate collection of waste materials as appropriate to the project waste and the available recycling and reuse programs in the project area.
- .2 Handling Requirements: Clean materials that are contaminated before placing in collection containers and ensure that waste destined for landfill does not get mixed in with recycled materials:
 - .1 Deliver materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to recycling process.
 - .2 Arrange for collection by or delivery to the appropriate recycling or reuse facility.
- .3 Hazardous Waste and Hazardous Materials: Handle in accordance with applicable regulations.

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 Not used.

1.2 ADMINISTRATIVE REQUIREMENTS

- .1 Acceptance of Work Procedures:
 - .1 Contractor's Inspection: Contractor: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
 - .1 Notify Departmental Representative in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
 - .2 Request Departmental Representative's inspection.
 - .2 Departmental Representative's Inspection
 - .1 Departmental Representative and Contractor to inspect Work and identify defects and deficiencies.
 - .2 Contractor to correct Work as directed.
 - .3 Completion Tasks: submit written certificates 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, adjusted and balanced and fully operational.
 - .4 Operation of systems: demonstrated to Owner's personnel.
 - .5 Work: complete and ready for final inspection.
 - .4 Final Inspection:
 - .1 When completion tasks are done, request final inspection of Work by Departmental Representative, and Contractor.
 - .2 When Work incomplete according to Owner and Departmental Representative, complete outstanding items and request re-inspection.

1.3 FINAL CLEANING

- .1 Clean in accordance with Section 01 74 00 – Cleaning.
 - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.
- .2 Waste Management: separate waste materials in accordance with Section 01 74 19 – Waste Management.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

DIVISION 02

EXISTING CONDITIONS



Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Not used.

1.2 DELIVERY, STORAGE AND HANDLING

- .1 Waste Management and Disposal: Separate waste materials in accordance with Section 01 74 19 – Waste Management and Disposal.

1.3 EXISTING CONDITIONS

- .1 The Contractor shall become familiar with the existing site conditions including access restriction to the work zones.

1.4 PROTECTION OF EXISTING STRUCTURES

- .1 The Contractor shall protect existing structures that must remain in place and the materials identified for salvage. If damaged, notify the Departmental Representative and repair or replace immediately at own cost

Part 2 Products

2.1 EQUIPMENT

- .1 Leave equipment and machinery running only while in use, except where extreme temperatures prohibit shutting down.
- .2 Demonstrate that tools and machinery are being used in manner which allows for salvage of materials in best condition possible.

Part 3 Execution

3.1 EXAMINATION

- .1 Survey existing conditions and correlate with requirements indicated to determine extent of structure demolition required.

3.2 PREPARATION

- .1 Do Work in accordance with Section 01 35 29.06 – Health and Safety Requirements.
- .2 Protection:
 - .1 Work in accordance with Section 01 35 43 – Environmental Procedures.
 - .2 Prevent movement, settlement, or damage to adjacent structures and utilities to remain in place. Provide bracing and shoring required.
 - .3 Keep noise, dust, and inconvenience to occupants to minimum.

- .4 Protect building systems, services and equipment.
- .5 Provide temporary dust screens, covers, railings, supports and other protection as required.
- .3 Disconnect and re-route electrical, telephone and communication service lines. Post warning signs on electrical lines and equipment which must remain energized to serve other products during period of demolition.
- .4 Locate and protect utility lines. Do not disrupt active or energized utilities traversing premises.

3.3 PARTIAL DEMOLITION OF STRUCTURES

- .1 The information concerning the existing structures or elements is not exhaustive and will therefore need to be completed on site.
- .2 No compensation will be paid for demolition beyond the boundaries indicated on the drawings or required by the Departmental Representative.
- .3 Mooring bollard
 - .1 Two (2) weeks before the start of the demolition work, the Contractor shall provide the Departmental Representative with the work method he intends to use.
 - .2 The demolition method chosen by the Contractor shall not damage or weaken any part of the slab sections to be preserved.
 - .3 The demolition equipment chosen by the Contractor shall in no way affect the stability and structural integrity of the concrete deck.
 - .4 The concrete surfaces to be demolished as shown on the drawings are approximate. The exact location and extent of the demolition work will be determined on site by the Departmental Representative.
 - .5 The Contractor shall make a 25 mm deep sawcut around the edge of the demolition area.
 - .6 The Contractor shall demolish the concrete to a minimum depth as indicated on the drawings or as required by the Departmental Representative.
 - .7 In the process, the Contractor may encounter reinforcing steel in the concrete. No additional money will be paid for reinforcing steel occurrences in the concrete. The following measures must be taken:
 - .1 The Contractor shall at all times take precautions to avoid damaging the rebars to be preserved.
 - .2 Reinforcing steel sufficiently weakened by corrosion should be replaced as directed by the Departmental Representative.

- .3 Contractor to remove concrete at least 25 mm behind existing steel bars when more than half the circumference of the steel reinforcement becomes exposed during demolition of the concrete. The demolished surface must be cleaned using a jet of pressurized air so that dust and debris are completely removed. Equipment must be equipped with a filter that removes oil; filter efficiency must be demonstrated before using the equipment.

- .8 Mooring bollard anchor must remain undamaged during work.

3.4 REMOVAL FROM SITE

- .1 Dispose of materials in accordance with applicable regulations. Disposal facilities must be approved. Do not deviate from disposal facilities without written authorization from Departmental Representative.

3.5 REPAIRS

- .1 General: Promptly repair damage to adjacent construction caused by structure demolition operations.

3.6 CLEANING AND RESTORATION

- .1 Keep site clean and organized throughout demolition procedure.
- .2 Upon completion of project, reinstate areas, affected by Work to condition which existed prior to beginning of Work or match condition of adjacent, undisturbed areas.

END OF SECTION

DIVISION 03

CONCRETE



Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 03 30 00.09 – Cast-in-place concrete – short form.

1.2 REFERENCE STANDARDS

- .1 CSA Group (CSA)
 - .1 CSA A23.1-14/A23.2-14, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
 - .2 CAN/CSA O86-14, Engineering Design in Wood.
 - .3 CSA O121-08(R2013), Douglas Fir Plywood.
 - .4 CSA O151-09(2014), Canadian Softwood Plywood.
 - .5 CSA O153-13, Poplar Plywood.
 - .6 CAN/CSA O325.0-16, Construction Sheathing.
 - .7 CSA O437 Series-93(R2011), Standards for OSB and Waferboard.
 - .8 CSA S269.1-16, Falsework and Formwork.
 - .9 CAN/CSA S269.3-M92(R2003), Concrete Formwork.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 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 proprietary materials used and include product characteristics, performance criteria, physical size, finish, and limitations.
 - .2 Submit 2 copies of WHMIS SDS in accordance with Sections 01 35 29.06 – Health and Safety Requirements and 01 35 43 – Environmental Procedures.

1.4 QUALITY ASSURANCE

- .1 Quality Assurance: in accordance with Section 01 45 00 – Quality Control.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store, and handle materials in accordance with Section 01 61 00 – Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground in dry location and in accordance with manufacturer's recommendations.

- .2 Store and protect formwork from damages.
- .3 Replace defective or damaged materials with new.

Part 2 Products

2.1 MATERIALS

- .1 Formwork materials:
 - .1 For concrete without special architectural features, use wood and wood product formwork materials to CSA O121, CAN/CSA O86 and CSA O437 Series CSA O153.
- .2 Form ties:
 - .1 For concrete not designated 'Architectural': removable or snap-off metal ties, fixed or adjustable length, free of devices leaving holes minimum 25 mm diameter in concrete surface.
- .3 Form release agent: Proprietary, non volatile material not to stain concrete or impair subsequent application of finishes or coatings to surface of concrete, derived from agricultural sources, non petroleum containing, non-toxic, biodegradable, low VOC.
- .4 Falsework materials: to CSA S269.1.

Part 3 Execution

3.1 FABRICATION AND ERECTION

- .1 The Contractor is the only principal contractor for the implementation means and methods, and assumes sole responsibility. Interventions by the Departmental Representative shall not relieve Contractor of liability; conversely, the non-intervention of the Departmental Representative does not signify approval of the means or methods.
- .2 Verify lines, levels, and centres before proceeding with formwork/falsework and ensure dimensions agree with drawings.
- .3 Obtain Departmental Representative's approval for use of earth forms framing openings not indicated on drawings.
- .4 Hand trim sides and bottoms and remove loose earth from earth forms before placing concrete.
- .5 Provide site drainage to prevent washout of soil supporting mud sills and shores.
- .6 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.
- .7 Align form joints and make watertight.
 - .1 Keep form joints to minimum.

- .8 Use 25 mm chamfer strips on external corners and 25 mm fillets at interior corners, joints, unless specified otherwise.
- .9 Form chases, slots, openings, drips, recesses, expansion and control joints as indicated.
- .10 Build in anchors, sleeves, and other inserts required to accommodate Work specified in other sections.
 - .1 Ensure that anchors and inserts will not protrude beyond surfaces designated to receive applied finishes, including painting.
- .11 Clean formwork in accordance with CSA A23.1/A23.2, before placing concrete.

3.2 REMOVAL AND RESHORING

- .1 Leave formwork in place for following minimum periods of time after placing concrete.
 - .1 3 days for mooring bollard bases.
- .2 Re-use formwork and falsework subject to requirements of CSA A23.1/A23.2.

3.3 CLEANING

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

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 03 30 00.09 – Cast-in-place concrete – short form.

1.2 REFERENCE STANDARDS

- .1 American Concrete Institute (ACI)
 - .1 SP-66-04, ACI Detailing Manual 2004.
- .2 ASTM International (ASTM)
 - .1 ASTM A123/A123M - 15 Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - .2 ASTM A143/A143M-07(2014), Standard Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement.
 - .3 ASTM A641/A641M-09a(2014), Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
 - .4 ASTM A775/A775M-17, Standard Specification for Epoxy-Coated Reinforcing Steel Bars.
 - .5 ASTM A884/A884M-14 Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement.
 - .6 ASTM A1064/A1064M-17, Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
- .3 CSA Group (CSA)
 - .1 CSA A23.1-14/A23.2-14, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.
 - .2 CAN/CSA A23.3-14, Design of Concrete Structures.
 - .3 CSA G30.18-09(R2014), Carbon Steel Bars for Concrete Reinforcement.
 - .4 CSA G40.20/G40.21-13(R2014), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .5 CSA W186-M1990(R2016), Welding of Reinforcing Bars in Reinforced Concrete Construction.
- .4 Reinforcing Steel Institute of Canada (RSIC)
 - .1 RSIC-2004, Reinforcing Steel Manual of Standard Practice.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

- .2 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Quebec, Canada.
 - .2 Indicate on shop drawings, bar bending details, lists, quantities of reinforcement, sizes, spacing, locations of reinforcement and mechanical splices if approved by Departmental Representative, with identifying code marks to permit correct placement without reference to structural drawings. Prepare reinforcement drawings in accordance with Reinforcing Steel Manual of Standard Practice – by Reinforcing Steel Institute of Canada.
 - .3 Detail lap lengths and bar development lengths to CAN3-A23.3, type B.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 – Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground and in accordance with manufacturer's recommendations.
 - .2 Replace defective or damaged materials with new.

Part 2 Products

2.1 MATERIALS

- .1 Reinforcing steel must come from a Canadian steel mill that holds a registration certificate compliant with ISO 9001:2008 “Quality Management Systems”. Provide the name of the steel mill that manufactured the reinforcement to the Departmental Representative at least two weeks prior the delivery of the reinforcement to the work site or to the manufacturing plant.
- .2 Substitute different size bars only if permitted in writing by Departmental Representative.
- .3 Reinforcing steel: billet steel, grade 400W, deformed bars to CSA G30.18, unless indicated otherwise.
- .4 Reinforcing steel: weldable low alloy steel deformed bars to CSA G30.18.
- .5 Cold-drawn annealed steel wire ties: to ASTM A1064/A1064M.
- .6 Galvanizing of non-prestressed reinforcement: to ASTM A123/A123M, 87 µm minimum zinc coating.
- .7 Chairs, bolsters, bar supports, spacers: to CSA A23.1/A23.2.

2.2 FABRICATION

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

2.3 SOURCE QUALITY CONTROL

- .1 Provide Departmental Representative with certified copy of mill test report of reinforcing steel, showing physical and chemical analysis, minimum 4 weeks prior to beginning reinforcing work.
- .2 Inform Departmental Representative of proposed source of supplied material.

Part 3 Execution

3.1 PREPARATION

- .1 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 authorized by Departmental Representative.
- .2 When field bending 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 and in accordance with CSA A23.1/A23.2.
- .2 24 hours prior to placing concrete, obtain Departmental Representative's approval of reinforcing material and placement.
- .3 Maintain cover to reinforcement during concrete pour.

3.4 FIELD TOUCH-UP

- .1 Touch up damaged and cut ends of galvanized reinforcing steel with compatible finish to provide continuous coating.

3.5 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 – Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 – Cleaning.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 03 20 00 – Concrete reinforcing.

1.2 REFERENCES

- .1 ASTM International
 - .1 ASTM D260, Standard Specification for Boiled Linseed Oil.
 - .2 ASTM D1751, Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Non extruding and Resilient Bituminous Types).
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-19.24, Multicomponent, Chemical-Curing Sealing Compound.
- .3 CSA International
 - .1 CSA-A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
 - .2 CSA A3000, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
 - .3 CAN/CSA-G30.18, Billet-Steel Bars for Concrete Reinforcement.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.
- .2 At least four (4) weeks prior to work inception, submit a certificate stating that the selected mix design will produce concrete of the quality, durability and performance called for, and that it will meet the requirements of CAN/CSA - A23.1/A23.2/A23.4.
- .3 Submit a certificate stating that the equipment and materials to be used for the manufacture of concrete meet the requirements of CAN/CSA-A23.1/A23.2/A23.4.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 – Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground, in a dry and ventilated area and in accordance with manufacturer's recommendations.
 - .2 Replace defective or damaged materials with new. Do not use ripped bags.

1.5 AMBIENT CONDITIONS

- .1 Placing concrete during rain or weather events damaging to concrete is prohibited.
- .2 Protect newly placed concrete from rain or weather events in accordance with CSA A23.1/A23.2.
- .3 Cold weather protection:
 - .1 Maintain protection equipment, in readiness on Site.
 - .2 Use such equipment when ambient temperature below 5 °C, or when temperature may fall below 5°C before concrete cured.
 - .3 Placing concrete upon or against surface at temperature below 5 °C is prohibited.
- .4 Hot weather protection:
 - .1 Protect concrete from direct sunlight when ambient temperature above 27 °C.
 - .2 Prevent forms of getting too hot before concrete placed. Apply accepted methods of cooling not to affect concrete adversely.
- .5 Protect from drying.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 – Construction/Demolition Waste Management Disposal and according to manufacturer's instructions.

Part 2 Products

2.1 MATERIALS

- .1 Pre-mixed concrete in bags from the list provided in annex
- .2 Water: to CSA A23.1/A23.2.
- .3 Reinforcing bars: to CAN/CSA-G30.18, Grade 400W, according to CAN/CSA-G30.18.
- .4 Welded steel wire fabric: to ASTM A185.
- .5 Joint filler:
 - .1 Bituminous impregnated fibreboard: to ASTM D1751.
- .6 Joint sealer/filler: grey to CAN/CGSB-19.24, Type 1, Class B.
- .7 Other concrete materials: to CSA A23.1/A23.2.

- .8 Heavy-duty cementitious non-shrink grout with the following properties:
- .1 Flow-cone in accordance with CSA A23.2-1B standard of 20-35 sec;
 - .2 Plastic expansion in accordance with CSA A23.2-1B standard of 0.8 %;
 - .3 Volume change in accordance with ASTM C 827 standards of 1.4 %;
 - .4 Final-set time in accordance with ASTM C 191 standards of 7.2 h;
 - .5 Expansion hardness in accordance with ASTM C 1090 standard of 0.04 %;
 - .6 Adhesion to steel in accordance with the Lane and Best method > 0.2 MPa;
 - .7 Open spaces under the plate testing in accordance with the H.A. Simons/Levelton method of 0.2 %;
 - .8 Compression resistance in accordance with the CSA A23.2-1B standard after one day of 25 MPa, after three (3) days of 42 MPa, after 7 days of 50 MPa and after 28 days of 62 MPa;
 - .9 Porosity in accordance with ASTM C642 standard of 9.3 % of absorption by boiling;
 - .10 Resistance in accordance with H.A. Simons/Levelton method of 6220 Ohm-cm;
 - .11 Chloride ions proof at 28 days in accordance with AASHTO T277 standard of 2760 coulombs.
- .9 Chemical anchor products:
- Epoxy adhesive allowing linkage between anchors and concrete shall have the following characteristics:
- .1 Bond strength to: ASTM C882, (2) day cure and seven (7) day cure, 10,8 MPa;
 - .2 Compressive strength to: ASTM D-695, 82.7 MPa;
 - .3 Compressive modulus to: ASTM D-695, 2600 MPa;
 - .4 Tensile strength 7 days to: ASTM D-638, 49,3 MPa;
 - .5 Elongation at break to: ASTM D-638, 1,1%;
 - .6 Heat deflection temperature to: ASTM D-648, 650 °C;
 - .7 Absorption to: ASTM D-570, 0.18%;
 - .8 Linear coefficient of shrinkage on cure to: ASTM D-2566, 0.008;
- .10 Materials shall comply with normes 3101, 5101, 3501, 3801 and 31001 of MTMDET

2.2 CONCRETE MIX FOR MOORING BASE

- .1 Prepare and provide pre-mixed concrete in bags according to manufacturer's instructions:
- .1 28 days compressive resistance: 35 MPa;
 - .2 Air-entraining: 4 to 9 %.

Part 3 Execution

3.1 PREPARATION

- .1 Provide Departmental Representative 24 hours notice before each concrete pour.
- .2 Place concrete reinforcing in accordance with as indicated on the drawings or as directed by the Departmental Representative.
- .3 During concreting operations:
 - .1 Development of cold joints not allowed.
 - .2 Ensure concrete delivery and handling facilitates placing with minimum of rehandling, and without damage to existing structure or Work.
- .4 Before pouring concrete, obtain authorization from the Departmental Representative on the proposed method to protect the concrete during placement and curing.
- .5 Protect previous Work from staining.

3.2 INSTALLATION/APPLICATION

- .1 Do cast-in-place concrete work in accordance with CSA A23.1/A23.2.

3.3 FINISHES

- .1 Pavements, walks, curbs and exposed site concrete:
 - .1 Screed to plane surfaces and use aluminum floats.
 - .2 Provide round edges and joint spacings using standard tools.
 - .3 Trowel smooth to provide lightly brushed non-slip finish.

3.4 CURING

- .1 Use curing compounds compatible with applied finish on concrete surfaces free of bonding agents and to CSA A23.1/A23.2.

3.5 FIELD QUALITY CONTROL

- .1 Concrete testing: to CSA A23.1/A23.2 by testing laboratory designated and paid for by Departmental Representative.

3.6 GROUT PLACEMENT

- .1 High performance non-shrink cement grout must be put in place in accordance with the manufacturer's recommendations. The Contractor shall submit a work method to the Departmental Representative for approval, at least 10 days prior to beginning work.

3.7 CHEMICAL ANCHORS

- .1 The Contractor can find reinforcing bars during the drilling of the existing concrete.
- .2 Unless otherwise specified in the plans and specifications, the characteristics of the drill holes for anchors are as follows:
 - .1 The diameter of the drill hole shall be at least 3 mm larger than the overall diameter of the metal rod to be inserted;
 - .2 Minimum depth shall be 200 mm;
- .3 Hole walls shall be cleaned as recommended by the anchor manufacturer. If an air blast is used, it must be equipped with a filter that removes oil; filter efficiency must be demonstrated before using the equipment.
- .4 For anchors with theoretical hole depth is equal to or greater than 300 mm, or for anchors installed in the ceiling position, the Contractor shall use an injection plunger compatible with the type of resin and the hole diameter used. The injection shall begin from the hole bottom and move outwards.
- .5 The Contractor shall follow the manufacturer's recommendations for holes drilling and preparation as well as the placement of the anchor product.
- .6 Place anchors in concrete as shown on plans.

3.8 CLEANING

- .1 Clean in accordance with Section 01 74 11 – Cleaning.
- .2 Use trigger operated spray nozzles for water hoses.
- .3 Designate cleaning area for tools to limit water use and runoff.
- .4 Cleaning of concrete equipment to be done in accordance with Section 01 35 43 – Environmental Procedures.

END OF SECTION

DIVISION 05

METALS



Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Not used.

1.2 REFERENCE STANDARDS

- .1 ASTM International (ASTM)
 - .1 ASTM A 53/A 53M-12, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
 - .2 ASTM A269M-15a, Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
 - .3 ASTM A307-14, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
 - .4 ASTM A108-18, Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished.
 - .5 ASTM A576-17, Standard Specification for Steel Bars, Carbon, Hot-Wrought, Special Quality.
 - .6 ASTM A615-20, Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
- .2 CSA Group (CSA)
 - .1 CSA G40.20-13/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 CAN/CSA G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .3 CSA S16-14, Design of Steel Structures.
 - .4 CSA W48-14, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).
 - .5 CSA W59-13, Welded Steel Construction (Metal Arc Welding) [Metric]
- .3 Underwater weld according to AWS D3.6

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.3 Shop Drawings:

- .1 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Quebec, Canada.
- .2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.
- .3 Provide written description of welding procedure for Departmental Representative approval two (2) weeks before the beginning of work, when requested by said Engineer.
- .4 Provide a written description of the welding procedures approved by the Canadian Welding Bureau or by a certified metallurgical engineer, entitled to practice in the province of Québec in which case the shop drawings will bear the seal of the engineer.
- .5 Assembly drawings to include the method of work and the assembly order of the elements.

1.4 QUALITY ASSURANCE

- .1 Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certifications: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 – Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Divert unused metal materials from landfill to metal recycling facility approved by Departmental Representative.

Part 2 Products

2.1 MATERIALS

- .1 Steel sections and plates: to CSA G40.20/G40.21, Grade 300W ou 350W.
- .2 Welding materials: to CSA W59.

- .3 Welding electrodes: to CSA W48 Series and AWS D3.6. The welding electrodes will be of the Broco "SofTouch" type or equivalent.
- .4 Anchor bolts: to ASTM A307.
- .5 Bolts: to ASTM A325 galvanised.
- .6 Coupler and tie rod nut: ASTM A108/ASTM A576.
- .7 Tie rod: ASTM A615, grade 75.
- .8 Grout: non-shrink, non-metallic, flowable, 15 MPa at 24 hours.

2.2 WELDS

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

2.3 METAL FABRICATION – GENERAL

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

2.4 FINISH

- .1 Not used

Part 3 Execution

3.1 EXAMINATION

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

3.2 ERECTION - GENERAL

- .1 Do welding work in accordance with CSA W59 et AWS D3.6 unless specified otherwise.

- .2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
- .3 Provide suitable means of anchorage acceptable to Departmental Representative such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.
- .4 Make field connections with bolts to CSA S16 or Weld field connection.

3.3 ACCESS LADDERS

- .1 Adding steel rungs: 32 mm diameter, welded to existing stringers/angle as shown on plans. Surfaces must be cleaned prior to welding.

3.4 ACCESS OPENING DOOR

- .1 Remove rust, organic matter or any other contaminant from contact surfaces.
- .2 Drill elements using a template.
- .3 Add reinforcement plates, if required, at locations indicated by Departmental Representative.
- .4 Obtain authorization from Departmental Representative before installing door. The hatch must remain open during work in the technical space of the wharf.

3.5 WALES

- .1 Remove rust, organic matter or any other contaminant from contact surfaces.
- .2 Weld angles before boring sheet pile.
- .3 Delimit the exclusion zone as described in section 01 14 00 – Work restrictions prior to bore the sheet pile.
- .4 Contractor must provide a fillet weld of 6 mm or equivalent where weld is not specified.
- .5 Shims are to be determinate on site, dimensions must be adapted to actual conditions. Contractor must provide additional plates, if applicable. No additional costs and no delay can be attributed to the supply of these elements.
- .6 Work on tie rod must be done according to the following steps:
 - .1 Cleaning of tie rod.
 - .2 If a minimum of 75 mm tie rod in good condition is available for the coupler sleeve, leave the existing nut in place. Otherwise, remove the existing nut, and the existing plate if required.
 - .3 Extend all tie rods before installing the new wale. Tie rods must not protrude from wale.
 - .4 Provide a minimum of 2 holes for injection: the bottom hole for the injection and the top one for the vent. Contractor must anticipate the loss of grout in the backfill and adjust methods and quantities accordingly.

3.6 STEEL SHEET PILE REPAIR

- .1 Remove rust, organic matter or any other contaminant from contact surfaces.
- .2 The Departmental Representative must first approve the surfaces to be repaired. To At the start of the Work, an inspection carried out with both Contractor and Departmental Representative is carried to target surfaces that need to be actually repaired.
- .3 Repair sheet pile according to various details shown on drawings. Contractor is responsible for choosing the right detail, inquire Departmental Representative if necessary. Provide a fillet weld of 6 mm or equivalent where weld is not specified.
- .4 Protect fenders from hot work.

3.7 UNDERWATER WELDING

- .1 The Contractor shall comply with the American Welding Society – American Standards Institute – Specification for underwater welding (ANSI/AWS D 3.6), Category C.
- .2 Contractor personnel shall be qualified for this type of welding. The Departmental Representative will require evidence of welders' qualifications.
- .3 Departmental Representative may also require test samples for each type of weld. Costs of sample tests to be borne by the Contractor.

3.8 CONTROL AND INSPECTION

- .1 Provide written description of approved welding procedure to the Departmental Representative four (4) weeks before the beginning of the work.
- .2 The Departmental Representative can proceed any time with non-destructive testing of the welds made on the working-site. The costs of these tests will be paid for by the contractor.
- .3 Contractor will give access and facilitate the welds examination by the Departmental Representative at no extra cost for the Department.
- .4 If the welds examination reveals any defect, it should be repaired and re-inspected by the Departmental Representative. The Contractor will have to change his welding procedure so as to eliminate all failures noted. The repairs and the second inspection will be paid for by the Contractor.
- .5 Allow the Departmental Representative to proceed with inspection either at the fabrication, erection and/or assembly plant.
- .6 Report to Departmental Representative any failure in the material or any assembly problem on the working-site. In the occurrence of any repairs, they should be made at the Departmental Representative utmost satisfaction.

3.9 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

- .3 Waste Management: separate waste materials in accordance with Section 01 74 19 – Waste Management and Disposal.

3.10 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

DIVISION 26

CATHODIC PROTECTION



Part 1 General

1.1 SECTION INCLUDES

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

1.2 RELATED SECTIONS

- .1 Section 01 11 00 – Description of Work
- .2 Section 01 61 00 – Common Products Requirements
- .3 Section 05 12 23 – Steel

1.3 REFERENCES

- .1 Contractor must comply with the codes, standards and regulations, as well as with the good practice rules as recommended by the following associations, related to the work to be executed. The federal laws and regulations prevail on the other codes and standards.
 - .1 ANSI, American National Standards Institute
 - .2 API, American Petroleum Institute
 - .3 ASME, American Society of Mechanical Engineers
 - .4 ASM, American Society for Metals
 - .5 ASTM, American Society for Testing and Materials
 - .6 AWS, American Welding Society
 - .7 AWWA, American Water Works Association
 - .8 BNQ, Bureau de Normalisation du Québec
 - .9 CEMA, Canadian Electrical Manufacturers Association
 - .10 CEQ, Quebec Electrical Code
 - .11 CGSB, Canadian Government Standard Board
 - .12 CPQ, Quebec Plumbing Code
 - .13 CSA, Canadian Standards Association
 - .14 CSST, Code de sécurité pour les travaux en construction
 - .15 MDDEP, Ministère du développement durable, de l'environnement et des parcs du Québec
 - .16 NACE, National Association of Corrosion Engineers
 - .17 NBC, National Building Code
 - .18 NFPA, National Fire Protection Association
 - .19 SSPC, Steel Structures Painting Council
 - .20 ULC, Underwriters Laboratory of Canada

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

1.4 GUARANTEE

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

1.5 VERIFICATION OF BASIC DATA FOR THE PROJECT REALIZATION

- .1 The approximate bathymetry is indicated on the plans. Before starting the anodes fabrication process, Contractor should verify the bathymetry to have the precise measurements of the equipment location and check if any obstacles prevent any work execution on the work site. Afterwards, the bathymetry results will be submitted for approval to department's representative, with the shop drawings showing the anodes assembly and the cables connections.

1.6 SHOP DRAWINGS

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

1.7 WORK DESCRIPTION

The quay is cathodically protected by several anode circuits. Existing systems are shown on the plans provided. The Contractor must make changes to the protection systems, install the requested equipment, and verify that the current circuits are functional. Without being limiting, the work to be carried out is as follows:

- .1 At the start of work on the site, an underwater inspection must be carried out by the Contractor to verify the actual condition of the anode circuits. The Contractor must provide to the Ministerial Representative the information off:
 - The condition of the anodes and cables of circuits A and B installed on the outer surface of the wharf sheet piles,
 - The condition of the anodes and cables of circuits C and D installed on the inner surface of the wharf sheet piles,
 - The condition of the anodes and cables of circuits E, F and G installed through the dock piles,
 - The condition of the anodes main cables of circuits E, F and G as well as the cable ducts of these circuits at the wharf surface,
 - The condition of the existing reference electrodes and the recovery of corrosion coupons for inspection,
 - The bathymetry outside and inside the wharf where the anodes will be installed.
- .2 At the start of the work, the Contractor must also do the following work on the surface of the wharf:
 - Check the condition of the protective HSS of the anode cables installed along the wheel guards on sides E, G and I of the wharf,
 - Open the shapes installed to protect the junctions of the anode cables with the anode main cables. In these locations, the Contractor must verify the condition of the splices and replace the protective shapes with other shapes bolted ones to allow opening for future inspections. Bolted connections will be stainless steel. Submit manufacturing drawings for approval of the proposed system,
 - Verify the condition of the underground conduits for main cables between the new R8 rectifier and anode circuits.
 - Take readings of the location of the current rectifiers R2, R4 and R5-7 inside the electrical container and submit it to the Ministerial Representative.
- .3 Thereafter, the contractor must make the following adjustments for the anode circuits A, B, C and D:
 - Remove and dispose the rectifier R1 / R3. This rectifier is installed in an oil pan and the contractor must take all necessary precautions for the removal, transport and disposal of this equipment in a safe manner and in accordance with the laws in force in the Province of Quebec;
 - Install the new R8 rectifier in the electrical container located at the end of the dock. When manufacturing the rectifier, the Contractor must ensure that this rectifier has the dimensions which allow its installation in the space available in the electrical container;

- Connect the main cables of the circuit A between the anodes A9 and A10;
 - Connect the main cables of the circuit B between anodes B8 and B9;
 - Connect the main cables of the circuit C between anodes C7 and C8;
 - Connect the main cables of the circuit D between anodes D8 and D9;
 - The anode main cables mentioned above will be installed in an HSS along the wheel guards of the wharf faces D and according to the indications of the plans;
 - In the electrical container, the main cables of circuits A and B will be connected to the new rectifier R8 and the main cables of circuits C and D will be connected respectively to the existing rectifiers R2 and R4.
- .4 For the anode circuit # 3 which protects the interior piles of the wharf, the following work must be carried out by the Contractor:
- Install three additional series of anodes (H, K and L) according to the indications provided on the plans. These circuits must be connected to the positive DC terminal of the R55-7 rectifier existing in the electrical container;
 - The anode main cables of circuits H, K and L must be mounted on the surface of the wharf through the existing conduit installed on the G face of the wharf. The conduit must be cleaned and repaired if it is necessary to allow the passage of the new anode collector cables;
 - Depending on the current state of the anodes of the existing circuits E, F and G, these anodes must be kept or removed at the request of the Ministerial Representatives;
 - The final position of the installation of the H, K and L anode circuits will be determined after the underwater inspection that the Contractor must perform at the start of the work. The fabrication of the anodes for these circuits should begin after this inspection to allow modifications if it is necessarily based on observations of the marine profile inside the wharf.
- .5 The Contractor must also install marine aluminum sacrificial anodes on sides D, E, I and J of the wharf. The location and the number of anodes to be installed on each side of the wharf are indicated on the plans provided. The dimensions and characteristics of these anodes are also indicated in the documents provided.
- .6 The cathodic protection operation is monitored as follows:
- Using a remote controlled data acquisition system; To this end, the Contractor must install a new twenty (20) channel data acquisition system in the existing RMU cabinet at the location shown on the plans. Then, he must make the connections of the instrumentation cables already installed in this cabinet and add the instrumentation cables for the voltage and amperage of the new R-8 rectifier. The Contractor must calibrate the RMU for the reference electrodes and the four current rectifiers and assist the Ministerial Representative for the starting of the RMU and the current rectifiers;
 - By corrosion coupons and reference electrodes installed on the sheet piles. The contractor shall install 14 corrosion coupons at the locations indicated on the plans at elevations to be determined on site. Existing reference electrodes should be checked during the underwater inspection.

- .7 To help the Contractor to familiarize himself with the site, in the appendix there are some photographs showing details related to the work in this section of the specifications. However, the work that the Contractor must perform in this project is not limited to the details presented in this section of the specifications and to determine the other related work necessary for the execution of the project, a site visit is recommended.

1.8 MINIMUM REQUIREMENTS

- .1 The electrical plans are schematic and the Contractor must make sure that the installation complies with the codes in force. Then, the works must be executed by qualified personnel.
- .2 Before proceeding with the electrical connection, a document signed by an authorized engineer must be provided to the Departmental Representative, certifying that the installation complies with the codes and standards in force in the Province of Quebec.

1.9 OPERATION AND MAINTENANCE DATA

- .1 At the most 15 days after the completion of work, provide six (6) copies of maintenance manual written in French.
- .2 Include the following information in the document
 - .1 The description and the operating and maintenance instructions of the various equipment, including the complete list of the equipment and of its components.
 - .2 The names, addresses and phone numbers of the sub-traders and professionals.
 - .3 The guarantees and their duration.
 - .4 The manufacturer identification and the origin of the products used in the present project.
 - .5 The action to take in the case of an emergency.
 - .6 The procedure to take upon ship's arrival and while the ships are docking at the wharf.
 - .7 The electrical components verification in order to prevent any accidents and particularly electrical shocks.

1.10 FORMATION MEETINGS

- .1 Give the wharf maintenance personnel the necessary formation regarding the operation and maintenance of the new system. Allow a minimum of 8 hours formation period on the site of the wharf.

Part 2 Products

2.1 PLATINIZED NIOBIUM ANODES

- .1 The anodes characteristics for the impressed current cathodic protection system are indicated on plans.
- .2 The anodes will be Anomet 40 type or the equivalent, of 3,17 mm (0,125 in) in diameter with a platinum film of 5 microns (200 micro-inches) thick. The effective length of the anodes is indicated on plans. Anode's rods must be installing in the assembly as show on plans.

The junction anodes – electrical conductors are made with a mechanical connection and with a silver weld. The connection is protected with a thermo-retractable sleeve and with epoxy. The Contractor must submit the connection's protection mode for approval.

2.2 REFERENCE ELECTRODES

- .1 Reference electrodes are Borin Stelth type, model SRE-004-SFB, specifically designed for seawater utilization (silver - silver chloride electrodes).
- .2 Reference electrodes are protected by a PVC conduit, as indicated on plans.

2.3 CORROSION SAMPLES

- .1 The corrosion samples will be made out of 350 W steel. The samples supports must be in electrical contact with the corrosion samples via connection bolts. The electrical continuity must be checked.
- .2 The corrosion samples surfaces must be polished and the oxide removed.
- .3 The corrosion samples will be installed only upon the rectifier start-up.

2.4 RECTIFIER R8

- .1 The rectifier must be specifically designed for cathodic protection in marine environment.
- .2 The general characteristics of the rectifier are as follows:
 - .1 Primary power supply in tri-phased 600 VAC
 - .2 Air cooling rectifier
 - .3 Rectifier is constant voltage type with 25 adjustment steps
 - .4 The casing of the rectifier is made out of painted steel.
 - .5 Rectifier made stainless steel supports anchored to the slab made out of stainless steel
 - .6 Thermal protection and automatic starter
 - .7 Lightning protection
 - .8 Voltage and amperage measurements terminals
 - .9 Local ON/OFF terminal
 - .10 Circuit for a remote ON/OFF
 - .11 High limit amperage protection system
 - .12 Ampere meter and voltmeter.
- .3 At the secondary, the rectifier R8 should supply 300 A at 18 VDC. The rectifier must be protected at maximum power.

2.5 ELECTRICAL CABLES AND CONNECTIONS

- .1 All the AC cables fabrication and dimensions must comply with the Electrical Code in force.
- .2 All the immersed DC cables must be specifically designed to permanently resist to seawater. Contractor must supply a certification of such. The anodes immersed cables must be double insulated, Hallar type and H.M.W.P.E., and protected by a flexible conduit in the sections that are not protected by a metallic channel.

- .3 The main anode cables and the negatives rectifiers cables are RU90 type.
- .4 The other DC cables must be designed for seawater utilization.
- .5 The cables splices must be designed for seawater utilization. Contractor must provide, for Departmental Representative's approval, a sample and the technical data sheets of the materials taken for the splices execution. As a guide for the splices fabrication, the Contractor must take the following requirements into account:
 - .1 The cables connection will be double: mechanical and by a weld.
 - .2 It is the Contractor's responsibility to design and make the splices according to the preceding requirements or otherwise. the Contractor can propose other types of splices or improve the ones described above. In all cases, the Contractor must provide a shop drawing and a sample of his design at least one week before the splices fabrication.
 - .3 It is specifically indicated that the epoxy layer must be shop made in controlled temperature and moisture conditions, according to the product technical data sheet.
- .6 The electrical cables and the surface splices on the wharf will have to be protected with metallic sheaths in the zones where the public can have direct access to the cables.
- .7 The reference electrodes cables and the negative cables are double insulated, Hallar type, and HMWPE, n° AWG 8.

2.6 OTHER ELECTRICAL COMPONENTS

- .1 On the R8 rectifier AC power supply circuit, the Contractor must install a shutoff panel with fuses.
- .2 All the equipment must comply with the requirements of the Electrical Code in force. It is the Contractor's responsibility to make sure the equipment and installation are in accordance with the electrical codes in force.

2.7 SACRIFICIAL ANODES

- .1 The sacrificial anodes are of five (5) types, as indicated on the plans.
- .2 The anodes dimensions and fabrication details are indicated on the plans.
- .3 In all cases, the anode steel core should be made so that the anode is adequately adhered to the core. Before starting the anodes fabrication, the manufacturer must submit for approval the fabrication details of the central core. The core must be made out of carbon steel with good weldability and equivalent carbon of 0.40%. Sand blast the flat bar to remove the oxide.
- .4 Particular attention should be brought upon the anodes casting to avoid formation of internal gas pouches so that the anodes do not tend to come up to the water surface. Shrinkage filling after solidification is now allowed. A maximum tolerance of 2% in weight is acceptable. All the anodes must be inspected before delivery on the work site. The inspection will be done at the Contractor facility in the Province of Quebec. The cost of the anodes shipping and handling are at the charges of the Contractor.

- .5 The chemical composition of the anodes should correspond to:

Zn: 2,8% to 6,5%

In: 0,01% to 0,02%

Si: 0,08% to 0,2%

Cu: 0,006% max

Fe: 0,12% max

Al: balance

The mercury activated anodes are not accepted. Before inspection, the manufacturer must provide the chemical analysis and the weight certificates. All anodes must be identified with anode number and heat number. All anodes must be conform to the NACE SP0387 specifications and/or the particular demands of this specifications.

- .6 The anodes open circuit potential must be -1.08 V and the anodes capacity of 2600 AH/Kg. Adjust the anodes chemical composition to obtain these specifications. The test must be done in accordance of NACE TM0190 standard. Provide the laboratory analysis certificates.

- .7 The surface of each anode corresponding to the sheet pile face must be covered with an epoxy paint layer. The paint should be compatible with the anode aluminum surface and resist to sea water immersion. Before the paint application, manufacturer should submit for approval the system he intends to use. Manufacturer should prepare the surfaces according to the paint manufacturer instructions. The paint application should also be submitted for Department Representative's approval with a sample of paint can. The paint application will be done in the shop, according to the moisture and temperature conditions prescribed by paint manufacturer. In all cases, the surfaces should be prepared by sandblasting in order to get a proper adherence and before painting, must be cleaned with a compatible solvent. The drying time will comply with the paint technical data. Upon transportation, the painted surfaces should be protected against scratches.

2.8 OTHER EQUIPMENT

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

2.9 MATÉRIALS USED

- .1 It is not allowed to use materials other than those CSA approved.
- .2 All the materials should be selected so they can resist to the marine environment conditions.

2.10 RMU

- .1 The long-term performance assessment will be made with a data acquisition system and by a communication system. This system will be installed in the existing service station. The model of RMU to be installed is Mobiltex. The data transfer must be done by satellite. Supply the onsite RMU control adapter.

- .2 The system should perform the following operations:
 - .1 Data saving to predetermining cycles. The RMU must have 20 data channels for potential electrodes (12 channels) and for the rectifier's voltage and current intensity (8 channels). The Contractor must connect at RMU the electrodes and the rectifier's instrumental cables. The data to be collected are the potential indicated by all the reference electrodes, the voltage, the power supplied by the rectifier and the rectifier cabinet temperature.
 - .2 Allow simultaneous saving in real time of the data collected by the data acquisition system.
 - .3 Save the software parameters in non-volatile memory.
 - .4 Save at regular intervals the above-mentioned data.
 - .5 Read or save the data in ON/OFF mode according to data acquisition system predetermined cycles.
 - .6 Allow the remote ON/OFF interruption of each one of the rectifiers.
- .3 The data acquisition software characteristics are as follows:
 - .1 Allow reading in real time of the data collected by the data acquisition system.
 - .2 Allow ON/OFF interruption and examine the data collected previously.
 - .3 Allow to predetermine the system control data collection cycles and the components ON/OFF interruption.
 - .4 Allow to save on a disk and print the data collected.

Part 3 Execution

3.1 PLATINE ANODES PREPARATION

- .1 The anodes will be in the shop made. Anodes should be carefully inspected by Contractor before commencing assembly. No platinum film damage will be tolerated.
- .2 Contractor must assemble anodes as indicated on plans. The anodes active length must be strictly respected.
- .3 The anodes fixation to the electrical conductor will first be made with a mechanical connector followed by a weld silver joint.
- .4 At the other end, Contractor must protect the copper core and the niobium casing with a weld so that they cannot get into contact with sea-water. This weld will be made by the anodes manufacturer.
- .5 The dead part of the anodes and the cable fixation to the anode will be sealed with epoxy. The Contractor should take all the necessary precautions to avoid that these can get into contact with sea-water.
- .6 The anode cable must be protected by a PVC flexible conduit. The end of this conduit must also be sealed with epoxy.
- .7 The PVC conduit threaded connections, caps and sleeves composing the anode assembly must also be sealed with epoxy.

3.2 REFERENCE ELECTRODES PREPARATION

- .1 The reference electrodes will be installed in PVC conduits in the same manner as the anodes.
- .2 The live part of the reference electrodes should be cleared off to allow the reading of the structure potential.
- .3 The reference electrodes should be properly calibrated before installation in the presence of Departmental Representative.

3.3 R8 RECTIFIER PREPARATION

- .1 Rectifier should be inspected by Contractor upon delivery in order to check whether they comply or not with the requirements.
- .2 If changes are made by Contractor, the work must be made by qualified personnel. These modifications should be approved by the rectifiers manufacturer.
- .3 The rectifier should be CSA approved.

3.4 PLATINE ANODES INSTALLATION

- .1 The anodes will be installed in the concave part of the sheet piles.
- .2 The anode will be fixed on a steel plate, as indicated on the plans.
- .3 Contractor must check if bolted connections are sufficiently screwed in.
- .4 Above the anode, Contractor must install an anode protective angle iron to avoid any damages due to ice forces.

3.5 CABLES INSTALLATION

- .1 The anodes cables will be welded to the sheet piles with steel channels indicated on the plans.

3.6 R8 RECTIFIER INSTALLATION

- .1 Rectifier will be installed in the rectifier's electrical building as indicated on the drawings.
- .2 The fixation of the rectifier supports will be made out of stainless steel anchored into the floor.
- .3 Contractor must connect the anodes main cable to the positive terminal of the rectifier.
- .4 Contractor must connect the cable coming from the structure to be protected to the negative terminals of the rectifier.

3.7 VERIFICATION AND REPARATION IF NECESSARY OF NEGATIVE CABLES

- .1 The rectifiers R2, R4, R5-7 and R8 negative electrical cables will be verified and if necessary fixed and after this, attached where indicated on plans.
- .2 The fixation metallic angle-iron will be welded with a continuous weld. Afterwards, the angle iron, the sheet pile and the negative cable bolted fixation will be protected with Petroleum Petro-40. The area around the fixation will be filled with a good water straining material.

3.8 INSTALLATION OF OTHER EQUIPMENT

- .1 The other components and equipment will be installed according to the rules of good practice and to the standards and codes in force.

3.9 PROTECTION OF THE PUBLIC

- .1 During the Work, Contractor must ensure that the public does not have any direct access to the hazardous areas. He must create protected working zones.
- .2 All the electrical components must be installed so that the public cannot have access to any of them.
- .3 Contractor must install the necessary posters, French and English, warning the public of the electrocution hazard.

3.10 OTHER INSTALLATIONS

- .1 The other installations should be made according to the actual standards in force.

3.11 VERIFICATION OF THE ELECTRICAL INSTALLATION

- .1 Before the beginning of the work, Contractor must verify by his engineer that all the materials and the whole installation of the cathodic protection system comply with the Electrical Code requirements and with the good practice rules. The work should be approved by a competent authority recognized in the province of Quebec. His recommendations will prevail on all documents supplied to Contractor.
- .2 Once the system is installed, the electrical system inspection will be made by a competent authority in the province of Quebec. A certification will be given to Departmental Representative before the tests are made. It is specifically forbidden to connect the system before the certification is obtained and submitted to Departmental Representative. In case of rejection, the appropriate adjustments will be made by Contractor and the costs of such will be paid for by Contractor.

3.12 START-UP OF THE CATHODIC PROTECTION SYSTEMS

- .1 Once all the components of the impressed current cathodic protection system are installed, the Contractor must proceed with the system start-up.
- .2 The Contractor must give technical assistance to the Departmental Representative for the start-up testing and allow the required time accordingly, to the utmost satisfaction of the Departmental Representative.

END OF SECTION

DIVISION 35

WATERWAY AND MARINE CONSTRUCTION



Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 05 50 00 – Metal fabrications.

1.2 MEASUREMENT AND PAYMENT

- .1 Measure fenders by units supplied and incorporated into work.

1.3 REFERENCE STANDARDS

- .1 ASTM International
 - .1 ASTM D 395, Test Methods for Rubber Property – Compression Set.
 - .2 ASTM D412-06ae2, Standard Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers-Tension.
 - .3 ASTM D429-08, Standard Test Methods for Rubber Property - Adhesion to Rigid Substrates.
 - .4 ASTM D471, Test Method for Rubber Property - Effect of Liquids.
 - .5 ASTM D 573, Test Method for Rubber - Deterioration in an Air Oven.
 - .6 ASTM D2240-05(2010), Standard Test Method for Rubber Property - Durometer Hardness.
 - .7 ASTM D 1053, Test Method for Rubber Property - Stiffening at Low Temperatures: Flexible Polymers and Coated Fabrics.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Quebec, Canada.
 - .2 Indicate items as follows:
 - .1 General arrangement of fender units.
 - .2 Arrangement and attachment of rubbing pieces.
 - .3 All hardware.
- .3 Test and Evaluation Reports: submit reports signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 – Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground and in accordance with manufacturer's recommendations.
 - .2 Store and protect materials from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.

Part 2 Products

2.1 MATERIALS

- .1 Fender « V » type, 300 mm high and 4000 mm long for wharf faces E to I:
 - .1 Physical properties:

	Property	Testing	Requirement
Before aging	Minimum Tensile Strength	ASTM D412	14 MPa
	Minimum Elongation at Break	ASTM D412	500 %
	Hardness, Shore (A) Durometer	ASTM D2240	70 +/-5
After aging	Minimum Tensile Strength	ASTM D412	14 MPa
	Minimum Elongation at Break	ASTM D412	500 %
	Hardness, Shore (A) Durometer	ASTM D2240	70 +/-5
Minimum tear strength		ASTM D 624	70 kN/m min.
Compression strength (22h à 70 °C)		ASTM D 395	30 % max.

- .2 Minimum energy absorption capacity at 52,5 % deflection: 30 kN.m/m.
- .3 Reaction at 52,5 % deflection: 240 kN/m

- .2 Fender consisting of an extrusion in « D » shape, 250 mm high and 3 400 mm long for wharf faces D and J:

- .1 Physical properties:

	Property	Testing	Requirement
Before aging	Minimum Tensile Strength	ASTM D412	14 MPa
	Minimum Elongation at Break	ASTM D412	500 %
	Hardness, Shore (A) Durometer	ASTM D2240	70 +/-5
After aging	Minimum Tensile Strength	ASTM D412	14 MPa
	Minimum Elongation at Break	ASTM D412	500 %
	Hardness, Shore (A) Durometer	ASTM D2240	70 +/-5
Minimum tear strength		ASTM D 624	70 kN/m min.
Compression strength (22h à 70 °C)		ASTM D 395	30 % max.

- .2 Minimum energy absorption capacity at 52,5 % deflection: 8,9 kN.m/m.
.3 Reaction at 52,5 % deflection: 191 kN/m

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for rubber marine fender installation in accordance with manufacturer's written instructions.
- .1 Visually inspect substrate in presence of Departmental Representative.
.2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
.3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.
- .2 Fenders will be located in splash zone, and may in addition be partially submerged in sea-water.
.3 Components of fendering system are subject to direct oil spray.
.4 Sea water may be contaminated with petroleum products
.5 Mean annual maximum and minimum temperatures are 28 degrees C and -44 degrees C.
.6 Presence of sea ice.

3.2 INSTALLATION

- .1 Install in accordance with manufacturer's instructions and as indicated on drawings.
- .2 Alter system components in accordance with written permission of Departmental Representative.

3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 – Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

END OF SECTION



Annex A
Wharf photographs



ANNEX A

LA ROMAINE WHARF

Photographs taken during wharf inspection

The photographs are provided to give a general view of the wharf and do not necessarily reflect the actual situation at the time of tenders. A site visit is strongly advised

GENERAL VIEWS



2019. 9. 29 13:48

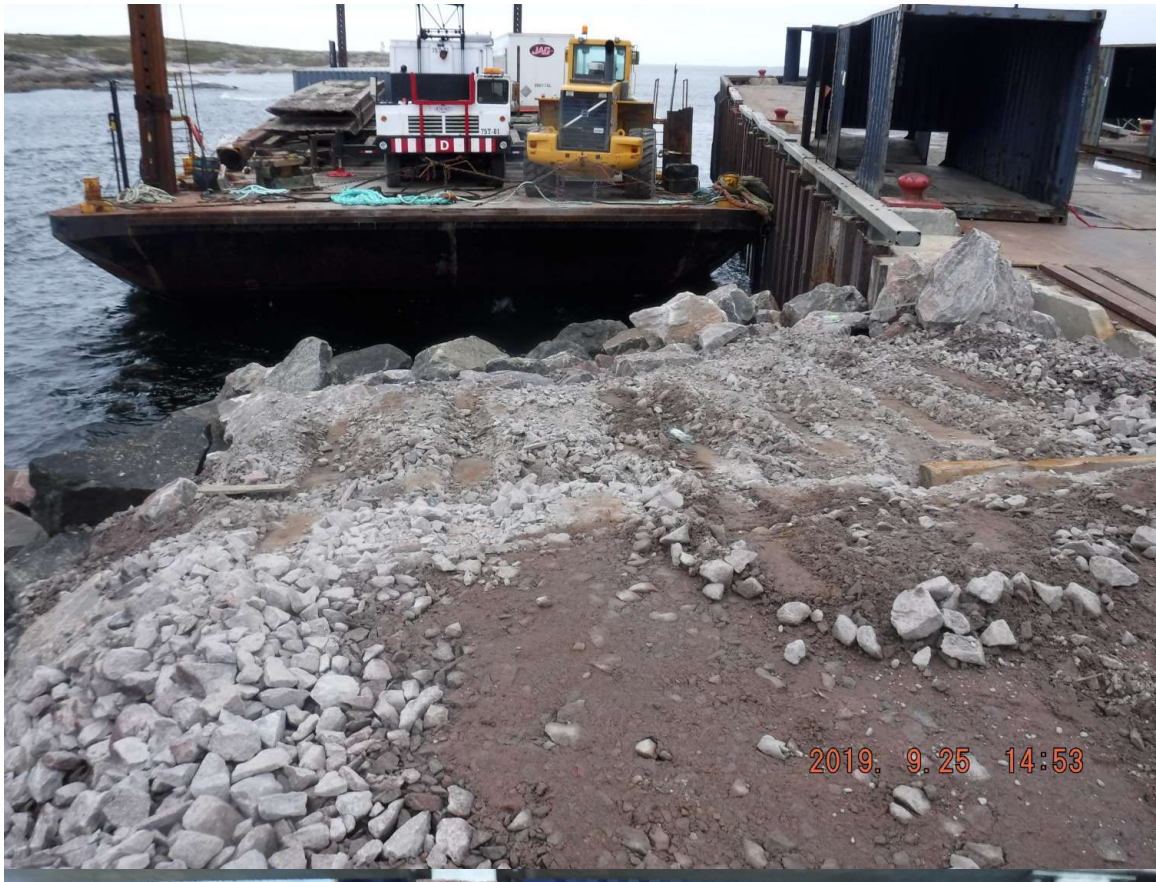


2019. 9. 29 13:50





FACE D









FACE E















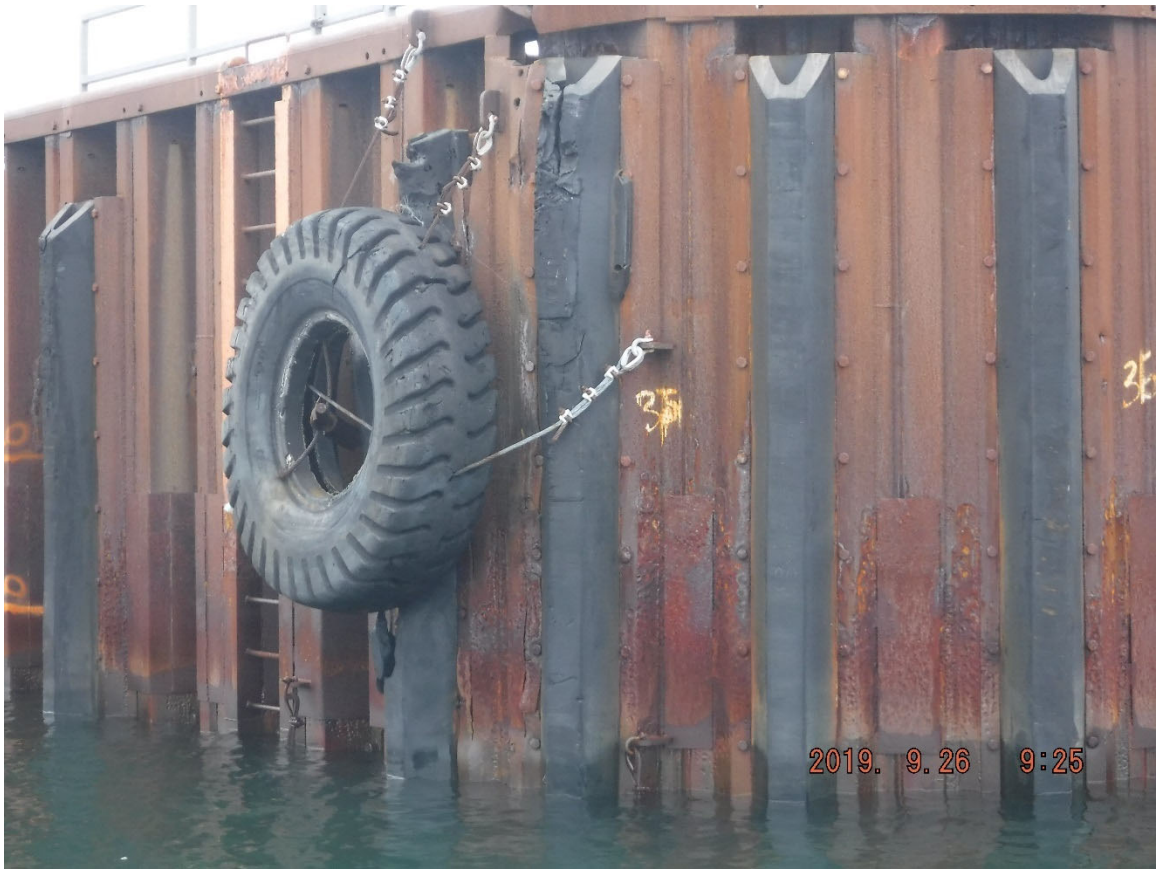


FACES F G H









FACE I

















FACE J









B

Annex B
Concrete materials list



**LISTE DES MATÉRIAUX RELATIFS AU
BÉTON ÉPROUVÉS PAR LE
LABORATOIRE DES CHAUSSÉES
(VERSION 2019)**

13 mai 2019

Mise en garde

Ce document présente la mise à jour de la liste des matériaux qui ont fait l'objet d'une évaluation ou d'un examen de la part de la Direction des matériaux d'infrastructures du ministère des Transports.

Cette liste constitue un document de référence destiné à fournir au personnel et aux mandataires des informations sur divers matériaux qui ont déjà fait l'objet d'une évaluation.

Les essais réalisés pour évaluer les divers produits sont basés sur les normes en vigueur ou sur des procédures adaptées par le Ministère pour ses propres usages.

À des fins contractuelles, l'utilisation de cette liste ne doit pas être restrictive, car la conformité des produits peut être reconnue par d'autres organismes compétents ou laboratoires accrédités par le Conseil canadien des normes. En aucun cas, elle ne doit être considérée comme une liste des produits homologués par le Ministère.

Il est de la responsabilité de l'utilisateur de cette liste d'effectuer, s'il le juge pertinent, le contrôle de la qualité des matériaux utilisés en chantier. Compte tenu du nombre de matériaux et de la complexité des essais réalisés, une réévaluation systématique de tous les produits n'est pas effectuée annuellement.

Cette liste peut être consultée sur le site Web du Ministère à l'adresse suivante :

<https://www.transports.gouv.qc.ca/fr/entreprises-partenaires/entreprises-reseaux-routier/chaussees/Documents/Liste-materiaux-beton-eprouves-lab-chaussees.pdf>

Pour toutes informations concernant les produits ou pour soumettre un produit pour évaluation, vous pouvez communiquer avec :

Nadia Pouliot, ing., Ph.D.
Direction des matériaux d'infrastructures
2700, rue Einstein
Québec, Québec
G1P 3W8

Téléphone : (418) 644-0181, poste 2234
Télécopieur : (418) 646-6692
Courriel : nadia.pouliot@transports.gouv.qc.ca

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Liste des matériaux relatifs au béton éprouvés par le Laboratoire des chaussées Version 2019

Béton de ciment (Structures & Chaussées)

ACCÉLÉRATEUR DE PRISE, BÉTON PROJETÉ À SEC

Norme: Exigence MTQ

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
Eucon DSC	Euclid Canada	1996	Aluminate	1,5% du ciment max.
ZC-2	Leedem Ltd.	2008		3-4% du ciment

ADJUVANT ANTI-LESSIVAGE

Norme: ASTM C-494-S

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
MasterMatrix UW 450	BASF Canada	2000	Cellulose	ancien RHEOMAC UW 450
MasterMatrix VMA 450	BASF Canada	2014	Cellulose	ancien RHEOMAC VMA 362
EUCON AWA	Euclid Canada	2002	Welan gum	
V-MAR 3	GCP Canada	2008	Welan gum	
SIKAMENT 100 SC	Sika	2008	Bi-Polymère	1 à 3L par m3
STABILIZER AQUAGEL	Sika	2012	Welan gum	Ancien Aquagel
STABILIZER 300SCC	Sika	2008	Polymère sulfonaté	20 à 240 ml
STABILIZER 4R	Sika	2013		65-455 ml/100 kg ciment

ADJUVANT COLLOÏDAL

Norme: ASTM C-494-S

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
MasterMatrix VMA 358	BASF Canada	2009	Welan gum	ancien RHEOMAC VMA-358
MasterMatrix VMA 362	BASF Canada	2006	Welan gum	ancien RHEOMAC VMA-362
CHRYSO PLAST V90	Chryso	2009		Béton autoplaçant
VISCTROL	Euclid Canada	1999	Welan gum	Béton autoplaçant
EUCON ABS	Euclid Canada	2010		Béton autoplaçant/autoniv
VISCTROL P	Euclid Canada	2015	En poudre	Bétons pré-ensachés
V-MAR 3	GCP Canada	2005	Biopolymer	Béton autoplaçant
STABILIZER 300SCC	Sika	2008	Polymère sulfonaté	20 à 240 ml
STABILIZER AQUAGEL	Sika	2012	Welan gum	Ancien Aquagel
SIKAMENT 100 SC	Sika	2008	Bi-Polymère	1 à 3L par m3
STABILIZER 4R	Sika	2013		65-455 ml/100 kg ciment

ADJUVANT ENTRAÎNEUR D'AIR

Norme: ASTM C-260

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
MasterAir VR 10	BASF Canada	1993	R.V.N.	ancien MB-VR
MasterAir AE 90	BASF Canada	1994	R.B.	ancien MB AE 90
MasterAir AE 200	BASF Canada	1993	A.G.	ancien MICRO-AIR
MasterAir AE 210	BASF Canada	2009	A.G.	ancien MICRO-AIR I
MasterAir AE 400	BASF Canada	2013		ancien EVERAIR PLUS
CHRYSO AIR NVR	Chryso	2007		

CHRYSO R2	Chryso	2007		0,4 -1,0 kg/100 kg ciment
PRO AIR 260	Chryso	2009		
AIREX-L	Euclid Canada	1993	H.S.	20-100 ml
AIREXTRA	Euclid Canada	1993	A.G.	20-100 ml
EUCON AIR 40	Euclid Canada	2009		
EUCON AIR MAC12	Euclid Canada	2012		6 à 260 ml par 100 kg lia
EUCON AIR MIX 200 P	Euclid Canada	2013		En poudre
EUCON AIR MAC6	Euclid Canada	2015		6 à 260 ml par 100 kg lia
Darex AEA EH	GCP Canada	1997	A.G.	
Darex II AEA	GCP Canada	1993	A.G.	45-200 ml
Darex AEA ED	GCP Canada	2008	A.G.	30-320 ml
DARAVAIR 1000	GCP Canada	2012		
Mapeair SA-50	Mapei	2018		10 à 400 ml/100 kg
MULTI-AIR 25	Sika	2010		10 à 195 ml/100 kg ciment
SIKA AIR 260	Sika	2012	A.G.	30-315 ml
SIKA AIR 360	Sika	2012	A.G.	60-100 ml
SIKA AIR 60	Sika	2017		30 à 3000 ml/100kg
TRIAIR LX	Tri-Tex	2018		10 à 95 ml/100 kg

ADJUVANT RÉDUCTEUR DE RETRAIT

Norme: ASTM C-494-S

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
MasterLife SRA 20	BASF Canada	2011	Remplace le TETRAGARD AS20	
Masterlife CRA 007	BASF Canada	2014	Béton avec air entraîné	
MasterLife SRA 035	BASF Canada	2016	Béton avec air entraîné	
CHRYSO SERENIS	Chryso	2009	Béton sans air entraîné	
EUCON SRA+	Euclid Canada	2008	Béton avec air entraîné	
EUCON SRA	Euclid Canada	1999	Béton sans air entraîné	
EUCON SRA-XT	Euclid Canada	2013	Béton avec air entraîné	
ECLIPSE 4500	GCP Canada	2011	Béton avec air entraîné	
ECLIPSE FLOOR 200	GCP Canada	2008	Béton sans air entraîné	ancien ECLIPSE FLOOR
CONTROL 40	Sika	2012	Béton avec air entraîné	
CONTROL-75	Sika	2015	Béton avec air entraîné	

ADJUVANT RÉDUCTEUR D'EAU

Norme: ASTM C-494

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
MasterPolyheed 997	BASF Canada	1993	POLYHEED 997	PRISE NORMALE (200-390 ml)
MasterPozzolith 210	BASF Canada	2003		ancien POZZOLITH 210
MasterSet R 100	BASF Canada	1993	POZZOLITH 100-XR	RETARDATEUR DE PRISE (250)
MasterGlenium 7500	BASF Canada	2009	Polycarboxylate	ancien GLENIUM 7500
MasterGlenium 7700	BASF Canada	2009	Polycarboxylate	ancien GLENIUM 7700
MasterGlenium 1466	BASF Canada	2001	Polycarboxylate	Ancien PS1466
MasterPolyheed 980	BASF Canada	2018		PRISE NORMALE (130-780 ml)
MasterSet DELVO	BASF Canada	2018		RETARDATEUR DE PRISE (260)
CHRYSO FLUID OPTIMA 203	Chryso	2007		RÉDUCTEUR ET SUPERPLASTIF
CHRYSO FLUID PREMIA 180	Chryso	2007		RÉDUCTEUR ET SUPERPLASTIF
CHRYSO FLUID PREMIA 190	Chryso	2007		RÉDUCTEUR ET SUPERPLASTIF
CHRYSO PLAST 460	Chryso	2007		

CHRYSO PLAST 500	Chryso	2007		
CHRYSO PLAST 850	Chryso	2007		
CHRYSO PLAST CER	Chryso	2007		RÉDUCTEUR & RETARDATEUR
CHRYSO PLAST OMEGA 101	Chryso	2007		
CHRYSO TARD CHR	Chryso	2007		RETARDATEUR
CHRYSO ENVIROMIX 300	Chryso	2008		
CHRYSO ENVIROMIX 380	Chryso	2008		
CHRYSO ENVIROMIX 728	Chryso	2008		
EUCON 727	Euclid Canada	1993	A.H.C.	RETARDATEUR DE PRISE (150
EUCON A+	Euclid Canada	2000		
EUCON DX	Euclid Canada	1993	A.H.C.	PRISE NORMALE (200-250 ml
EUCON LW	Euclid Canada	2006		PRISE NORMALE
EUCON MR	Euclid Canada	1997		PRISE NORMALE (260-900 ml
EUCON PRO-FINISH	Euclid Canada	2006	L.S.	PRISE NORMALE
EUCON WR	Euclid Canada	1997	L.S.	PRISE NORMALE
EUCON WR-75	Euclid Canada	1993	L.S.-GLUC.	PRISE NORMALE (125-250 ml
PLASTOL 341	Euclid Canada	2003		PRISE NORMALE
EUCON STASIS	Euclid Canada	2013		RETARDATEUR DE PRISE (260
EUCON RETARD P	Euclid Canada	2013		RETARDATEUR DE PRISE
EUCON RETARDER 100	Euclid Canada	2014		RETARDATEUR DE PRISE
EUCOSHOT S	Euclid Canada	2015		Retardateur (béton projet
DARATARD HC	GCP Canada	1993	A.H.C.	RETARDATEUR DE PRISE (125
DARATARD-17	GCP Canada	1993	A.H.C.	RETARDATEUR DE PRISE (125
WRDA 82	GCP Canada	1993	L.S.	RETARDATEUR DE PRISE (240
ZYLA R	GCP Canada	2012		Retardateur de prise
ZYLA 630	GCP Canada	2014	ancien WRDA 20	Prise normale (195 à 325
ADVA XT2	GCP Canada	2016		Maintien de l'affaissemen
Recover	GCP Canada	2017		Retardateur de prise
Mapeplast R815	Mapei	2018		195 à 325 ml/100 kg
Mapetard 800	Mapei	2018		RETARDATEUR DE PRISE (130
PLASTOCRETE 161	Sika	2008	Ligno+polymères	130 à 260 ml
SIKAMENT 686	Sika	2008	Polycarboxylate	195 à 780 ml
SIKAPLAST 500	Sika	2008	Polycarboxylate	195 à 780 ml
PLASTIMENT	Sika	2009		RETARDATEUR DE PRISE
PLASTOCRETE 10N	Sika	2012	C.H.-GLUC.	PRISE NORMALE (150 ml)
PLASTIMENT RX	Sika	2012	A.H.C.	RETARDATEUR DE PRISE (160
SIKAPLAST 200	Sika	2012		PRISE NORMALE (195-780 ml
PLASTOCRETE 161N	Sika	2012	L.S.-GLUC.	PRISE NORMALE (250 ml)
TRISSET SL	Tri-Tex	2018		RETARDATEUR DE PRISE (130

ADJUVANT STABILISATEUR D'AFFAISSEMENT

Norme: ASTM C-494-S

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
RheoTEC Z-60	BASF Canada	2013	Maintien de l'affaissement	
PLASTOL AMP-X2	Euclid Canada	2012	Maintien de l'affaissement	Combiner avec un polycarb
ADVA XT2	GCP Canada	2016	Maintien de l'affaissement	
ViscoFlow-2020	Sika	2015	Maintien de l'affaissement	

ADJUVANT SUPERPLASTIFIANT

Norme: ASTM C-494-A&F

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
MasterRheobuild 1100	BASF Canada	1993	CONCHEM SPN	PRISE NORMALE (500-2000 m
MasterRheobuild 1000	BASF Canada	1993	RHEOBUILD 1000	PRISE NORMALE (650-1600 m
MasterGlenium 3030	BASF Canada	2003	GLENIUM 3030 NS	PRISE NORMALE
MasterGlenium 3400	BASF Canada	2010	Polycarboxylate	ancien GLENIUM 3400 NV
MasterGlenium 7102	BASF Canada	2007	Polycarboxylate	ancien GLENIUM 7102
MasterGlenium 7500	BASF Canada	2007	Polycarboxylate	ancien GLENIUM 7500
MasterGlenium 7700	BASF Canada	2008	Polycarboxylate	GLENIUM 7700 (préfab)
MasterGlenium 1466	BASF Canada	2001	Polycarboxylate	Ancien PS1466
MasterGlenium 7511	BASF Canada	2016	Polycarboxylate	
MasterPolyheed 980	BASF Canada	2018		PRISE NORMALE (130-780 ml
CHRYSO FLUID AG	Chryso	2007	PMS	
CHRYSO FLUID OPTIMA 100	Chryso	2007	Amino Phosphonate Polyox	TRÈS LONGUE OUVRABILITÉ
CHRYSO FLUID OPTIMA 203	Chryso	2007		RÉDUCTEUR ET SUPERPLASTIF
CHRYSO FLUID OPTIMA 216	Chryso	2007	Polycarboxylate	
CHRYSO FLUID PREMIA 100	Chryso	2007	Polycarboxylate	
CHRYSO FLUID PREMIA 180	Chryso	2007		RÉDUCTEUR ET SUPERPLASTIF
CHRYSO FLUID PREMIA 190	Chryso	2007		RÉDUCTEUR ET SUPERPLASTIF
CHRYSO FLUID OPTIMA 256	Chryso	2008		
CHRYSO FLUID OPTIMA 126	Chryso	2008		
CHRYSO FLUID PREMIA 196	Chryso	2009	Polycarboxylate	
CHRYSO FLUID OPTIMA 306	Chryso	2009		
CHRYSO FLUID OPTIMA 300	Chryso	2009		
ENVIROMIX 159	Chryso	2009	Polycarboxylate	
EUCON 37	Euclid Canada	1993	N.S.S.	PRISE NORMALE (400-2000 m
EUCON 537	Euclid Canada	1993	N.S.S.	RETARDATEUR DE PRISE (440
EUCON MR	Euclid Canada	2000		
EUCON SPC	Euclid Canada	2006	Polycarboxylate	PRISE NORMALE (195-78 ml)
PLASTOL 341	Euclid Canada	2003		
PLASTOL 5000	Euclid Canada	2001	Polycarboxylate	
PLASTOL 5500	Euclid Canada	2006	Polycarboxylate	PRISE NORMALE (195-520 ml
PLASTOL 5700	Euclid Canada	2006	Polycarboxylate	PRISE NORMALE (130-391 ml
PLASTOL 6000	Euclid Canada	2008	Polycarboxylate	PRISE NORMALE (195-780 ml
PLASTOL 6200EXT	Euclid Canada	2008	Polycarboxylate	PRISE NORMALE (195-780 ml
PLASTOL 6400	Euclid Canada	2010	Polycarboxylate	195 à 780 ml par 100 kg d
PLASTOL P	Euclid Canada	2013		En poudre
PLASTOL ULTRA 209	Euclid Canada	2015	Polycarboxylate	
PLASTOL 6420	Euclid Canada	2016	Polycarboxylate	130 à 650 ml par 100 kg d
PLASTOL 5000 SCC	Euclid Canada	2018	Polycarboxylate	
ADVACAST 575	GCP Canada	2008	Polycarboxylate	
ADVACAST 540	GCP Canada	2005	Polycarboxylate	
ADVACAST 555	GCP Canada	2006	Polycarboxylate	
DARACEM-19	GCP Canada	1993	N.S.S.	PRISE NORMALE (750-1250 m
ADVA FLEX	GCP Canada	2008	Polycarboxylate	
ADVA 140M	GCP Canada	2008	Polycarboxylate	

ADVA 190	GCP Canada	2008	Polycarboxylate	(195-980 ml)
DARACEM-190	GCP Canada	2008	Polycarboxylate	PRISE NORMALE (390-1300 m)
ADVA 405	GCP Canada	2009	Polycarboxylate	
ADVA CAST 585	GCP Canada	2014	Polycarboxylate	130 à 650 mL/100 kg
ADVA 390	GCP Canada	2014	Polycarboxylate	130 à 650 mL/100 kg
ADVA Cast 535	GCP Canada	2010	Polycarboxylate	Ancien EXP 684
MIRA 95	GCP Canada	2015	Polycarboxylate	
ADVA 198	GCP Canada	2015	Polycarboxylate	
ADVA 150M	GCP Canada	2016	Polycarboxylate	
CLARENA MC2000	GCP Canada	2017	Polycarboxylate	130 à 1000 ml/100kg
CONCERA SA8080	GCP Canada	2017	Polycarboxylate	520 à 1305 ml/100kg
CONCERA SA8080	GCP Canada	2018	Polycarboxylate	520 à 1305 mL/100 kg
Dynamon SX	Mapei	2018	Polycarboxylate	200 à 975 ml/100 kg
VISCOCRETE 2100	Sika	2008	Polycarboxylate	130 à 780 ml
VISCOCRETE 6100	Sika	2008	Polycarboxylate	195 à 780 ml
SIKAMENT 300 N	Sika	2008	Naphtalène	390 à 1300 ml
VISCOCRETE 2110	Sika	2010	Polycarboxylate	195 à 520 ml/100 kg ciment
SIKAMENT SP-MN	Sika	2012	N.M.S.S.	PRISE NORMALE (615-2500 m)
VISCOCRETE 1000	Sika	2015	Polycarboxylate	195 à 1170 ml/100 kg
SIKAMENT-475	Sika	2017		200 à 980 ml/100 kg
TRIPLAST RMX	Tri-Tex	2012	Polycarboxylate	100-1000 ml/100 kg de cim
TRIPLAST RMC	Tri-Tex	2013	Polycarboxylate	100-1000 ml/100 kg de cim

BÉTON AUTOPLAÇANT (EN SAC)

Norme: MTQ 3101 XIV-S

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
Ambex SCC	Ambex	2002		
Ambex RS-SCC	Ambex	2005		À prise rapide
MS-S10 SCC	Matériaux King	1999	Avec fumée de silice	
RS-S10 SCC	Matériaux King	2013		À prise rapide
MS-S6 SCC	Matériaux King	2014	Avec fumée de silice	Pierre 6 mm
Target Flowcrete FS SCC	Produits Daubois	2017	Avec fumée de silice	Pierre 2,5-10 mm
Sikacrete-08 SCC	Sika	2009		
Solhycrete A.N.	Solhydroc	2012		
Solhycrete SCC-06	Solhydroc	2014	Granulats 6 mm	
Solhycrete SCC-10	Solhydroc	2014	Granulats 10 mm	
Meadow-Crete FNP	W.R.Meadows	2007		

BÉTON PRÉ-MÉLANGÉ (EN SAC)

Norme: MTQ 3101

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
Ambex RSLMC	Ambex	2011	Avec Ambexcrete SB-39	À prise très rapide
AMBEX5000QC	Ambex	2018		
AMBEX LMC-15	Ambex	2018	Avec Ambexcrete SB-39	
Béton MS-S10	Matériaux King	2009	Avec fumée de silice	Pierre 2,5-10 mm
Béton LM-S10	Matériaux King	2009	Béton latex 15%	Pierre 2,5-10 mm
Béton HP-S10	Matériaux King	2011	Béton 25 MPa à 12h	Pierre 2,5-10 mm
Béton RS-S10	Matériaux King	2013	À prise rapide	Pierre 2,5-10 mm
Sikacrete-211 Flow PLUS	Sika	2017	Avec affaissement 190 mm	Granulats 8 mm

BÉTON PROJETÉ À SEC (EN SACS)Norme: MTQ 3201

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
Ambex 99A	Ambex	1999	Ciment type GUb-SF	Sans accélérateur
Ambex 99B	Ambex	1999	Ciment type GUb-SF	Avec accélérateur
Ambex 99C	Ambex	1999	Ciment type HE	Sans accélérateur
Ambex 99D	Ambex	1999	Ciment type HE	Avec accélérateur
Target Superstick SD22011S30	Les produits Daubois	2016	Liant Gub-SF	Sac de 30 kg
Target Superstick SD22011X10	Les produits Daubois	2016	Liant Gub-SF	Sac de 1000 kg
Target Superstick SD22011X15	Les produits Daubois	2016	Liant Gub-SF	Sac de 1500 kg
MS-D1 X MTQ, 2520045	Matériaux King	2006	GUb-SF + Acc	Sac de 30 kg
MS-D1 MTQ, 2520070	Matériaux King	2001	Ciment type GUb-SF	Sac de 30 kg
MS-D1 MTQ, 2525020	Matériaux King	2001	Ciment type GUb-SF	Sac de 1000 kg
MS-D1 X MTQ, 2525054	Matériaux King	2006	GUb-SF + Acc	Sac de 1000 kg
MS-D1 MTQ, 2525120	Matériaux King	2006	Ciment type GUb-SF	Sac de 1500 kg
RS-D1 SY G2	Matériaux King	2015	Ciment Rapid Set	Avec fibres

BÉTON PROJETÉ HUMIDE (EN SACS)Norme: MTQ 3301

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
MS-W1, 2520093	Matériaux King	2005	Ciment type GUb-SF	Sac de 30 kg

LATEX À BÉTON ET MORTIERNorme: FHWA RD # 78-35

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
Styrofan 1186	BASF	1985	Styrène-Butadiène	Utilisé dans le béton
Concentrated latex adhesive	CPD	2003	Styrène-butadiène	
Dow Modifier A	Dow Chemical	1985	Styrène-Butadiène	Utilisé dans le béton
SBR Latex	Euclid Canada	1997	Styrène-Butadiène	Utilisé dans le béton
Planicrete AC	Mapei	2011	Acrylique	Utilisé dans le béton
Albitol Concentrate	Sika	2001	Styrène-Butadiène	Utilisé dans le béton

MATÉRIAU DE CURE, CATÉGORIE : Colorant fugaceNorme: MTQ 3501

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
Resin Cure J11WD avec teinture	Dayton Superior	2015	À base d'eau	
Chemorseal AW-25	Tri-Tex	2007	A base d'eau, Type II	
Sealtight 1100	W.R.Meadows	1999	A base d'eau	

MATÉRIAU DE CURE, CATÉGORIE : Pigmenté blancNorme: MTQ 3501

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
Safe-Cure 3000	ChemMasters	2007	À base d'eau	
White Resin Cure J10HS	Dayton Superior	2015	À base d'eau	autres usages
Super Aqua Cure Vox	Euclid Canada	1998	A base d'eau	
Chemorseal S23 Low VOC Blanc	Tri-Tex	2015	À base de solvant	autres usages
Sealtight 1215	W.R.Meadows	2002	A base d'eau	
Sealtight 1220	W.R.Meadows	2002	A base d'eau	Pavage en béton, MTQ 3501
Sealtight 2250 White	W.R.Meadows	1998	A base d'eau	

MATÉRIAU DE CURE, CATÉGORIE : TranslucideNorme: MTQ 3501

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
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MasterKure CC 300 XS	BASF	2012	À base de solvant	Ancien Kure-n-seal 30 ES
CPD Clair	CPD	1997	A base de solvant	
Cipadeck Cure & Seal (Solvant)	CPD	2010	A base de solvant	Taux de 5,9 m2/L
Cipadeck WB	CPD	2012	A base d'eau	
Clear Resin Cure J11W	Dayton Superior	2015	À base d'eau	
Super Diamond Clear Vox	Euclid Canada	2014	A base d'eau	
Certi-Vex AC 309	National Concrete Accessoire	2007	À base d'eau	
Florseal WB 18	Sika	2008	À base d'eau	
Florseal WB 25	Sika	2008	À base d'eau	
Chemorseal AW-25	Tri-Tex	2007	À base d'eau, Type I	
Chemorseal AW-10	Tri-Tex	2007	À base d'eau	
Chemorseal S23 Low VOC (transp	Tri-Tex	2015	À base de solvant	
Sealtight 1100	W.R.Meadows	1999	A base d'eau	
Sealtight CS-309	W.R.Meadows	1998	A base de solvant	Pas de film en surface,
Vocomp-25	W.R.Meadows	2016	À base d'eau	

Matériaux relatifs aux chaussées

CORDON DE RETENUE

Norme: ASTM D-5249

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
Hot Rod XL	Industrial Thermo Polymer	2005	Polyéthylène HD	Couleur BEIGE uniquement
Sealtigh Cera Rod	W.R.Meadows	1996	Polyolefin	Couleur ROSE

JOINT PRÉMOULÉ POUR PAVAGE DE BÉTON

Norme: ASTM D-2628

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
Neoprene E-686	D.S. Brown	2011	Neoprene	
Neoprene S-816	Elastomer Seals inc.	1999	Neoprene	
WB 812	Watson Bowman Acme	2004	Neoprene	

PRODUIT DE RÉPARATION DE SURFACE

Norme: Exigence MTQ

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
Wabo Élastopatch	BASF	2012	Mortier élastomère	Réparation chaussée en bé
Delpatch	D.S. Brown	2010	Mortier élastomère	Réparation chaussée en bé

PRODUIT D'ANCRAGE DES GOUJONS ET TIRANTS

Norme: ASTM E-488

Note: Voir les produits d'ancrage des goujons et tirants dans la section Matériaux relatifs aux structures

PRODUIT D'INJECTION DE FISSURES

Norme: ASTM C-881

Note: Voir les produits d'injection de fissures dans la section Matériaux relatifs aux structures.

Matériaux relatifs aux structures

COUCHE D'ACCROCHAGE (MEMBRANE)

Norme: Exigence MTQ

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
Bakor 930-18	Cie Henry Canada	2003		Solvant
Bakor Aquatac	Cie Henry Canada	2003		Base d'eau
Blueskin LVC	Cie Henry Canada	2012		Solvant
Adhésif Blueskin	Cie Henry Canada	2012		Solvant
Roofcraft	Iko	2003		Solvant
Roofcraft Aquabarrier WB	Iko	2003		Base d'eau
Apprêt Antirock	Soprema	2003		Solvant
Apprêt Antirock Émulsion	Soprema	2003		Base d'eau
Elastocol Stick	Soprema	2008		Solvant

COULIS CIMENTAIRE EN SAC

Norme: MTQ 3901

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
Rapid Set Cement All	Ambex	2001		Prise très rapide
Masterflow 928	BASF	2012		
Masterflow 555	BASF	2012		
Masterflow 4316	BASF	2015		
Fix 331 Industriel	Condor Chimique	2010		
H.E.S. High Early Strength	CPD	2003		
Non-Shrink Grout Pre-mix	CPD	2003		
Coulis sans retrait pour compactior	CPD	2012		
CPD Cable Grout	CPD	2018		
Sure Grip High Perf.	Dayton Superior	2003		
1107 Advantage Grout	Dayton Superior	2014		
N.S.Grout	Euclid Canada	1997		
Hi-Flow Grout	Euclid Canada	2007		
Coulis de précision PG	Hilti	2010		
Coulis à usages multiples MG	Hilti	2010		
Planigrout 712	Mapei	2009		
In-Pakt Construction	Matériaux King	2007		
In-Pakt Precision	Matériaux King	2007		
MS Cable	Matériaux King	2007		
In-Pakt Precision CT	Matériaux King	2012	Jusqu'à 5°C	
Target Coulis Expansif à base de c	Produits Daubois	2017	Sans retrait	Durcissement normal
Target Coulis pour base d'équipem	Produits Daubois	2018	Pour base d'équipement	
Target Coulis à la fumée de silice	Produits Daubois	2018	Pour boulon d'ancrage	
Target Coulis Expansif à base de c	Produits Daubois	2018	Sans retrait	Durcissement rapide
M-Bed Standard	Sika	1979		
Sikagrout 212	Sika	2001		
Sikagrout 212 HP	Sika	2001		
Sikagrout 428 FS	Sika	2015		Prise rapide
Precast Slab Dowel Grout	Solhydroc	2008		Pour dalles préfabriquées
Solhygrout GC	Solhydroc	2009		

Solhydflo Grout-6% SF	Solhydroc	2018
Chemorgrout 200	Tri-Tex	1988
CG 86	W.R.Meadows	1995

COULIS CIMENTAIRE EN SAC (POST-TENSION)

Norme: MTQ 3901

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
Masterflow 1205	BASF	2003		
Euco Cable Grout PTX	Euclid Canada	2004		
Special Grout 400	Five Star	2007		
PT Precision	Matériaux King	2007		
SikaGrout 300 PT	Sika	2004		
Cable Duct Grout 1121	Target Product	2016		

DOUBLURE DE COFFRAGE

Norme: MTQ 31001

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
Hydroform-2000	ConMat Inc.	1998		
Zemdrain MD-2	Dupont	1999		
Zemdrain Classic (black)	Dupont	2009		
Pira-Form	Industries Pirrandello	2002		
Peridrain-Fabric	Peri	2004		
Drainaform R	Solmax	1999		
Textaforme	Textaforme inc.	2002		

ENDUIT DE SURFACE TYPE 1

Norme: MTQ 31101

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
Ambexcoat SBNF	Ambex	2000	Acrylique	Texture sablée
MasterSeal 581	BASF	2005	Cimentaire	Ancien Thoroseal
MasterProtect HB 300 SB	BASF	2011	Acrylique	Ancien Super Colorcoat VO
Chemdur L Type S	Chemdur	2011	Acrylique	Texture sablée
Cem Kote Flex Plus	Gemite	2006	Cimentaire	Texture sablée
Cem Kote Flex ST	Gemite	2006	Cimentaire	Texture sablée
Astec 5000 HB	Isotherm	2000	Acrylique	Texture sablée
Planiseal 288	Mapei	2018	Cimentaire	Texture sablée
Miracote	Par Spec	1996	Cimentaire	Texture sablée
B97-155	Sherwin Williams	2012	Acrylique	Texture sablée
Sikagard 550 W	Sika	2009	Acrylique	Avec Sikagard Elastic Base Coat
Sikagard 670 W	Sika	2009	Acrylique	Avec Sikagard Elastic Base Coat
HY-TEX	Solhydroc	2004	Acrylique	Texture sablée
Stef 200	Stef Coatings	2002	Cimentaire	Ancien Primer
Chemorlast	Tri-Tex	2007	Acrylique	Texture sablée

ENDUIT DE SURFACE TYPE 2

Norme: MTQ 31101

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
Lankolastic 228	Lanko	2003	Cimentaire	Texture sablée
Mapelast	Mapei	2011	Cimentaire	Texture sablée
Miraflex Membrane C	Par Spec	2014	Cimentaire	Texture sablée
Chemorlastic	Tri-Tex	2015	Cimentaire	Texture sablée

IMPERMÉABILISANT À BÉTON : Silane- Solide 40% ou PlusNorme: MTQ 3601

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
Ambex Silane 40	Ambex	1999	Silane	Taux de 3.0 à 6.0 m2/l
Isoflex 618	Ambex	2001	Silane	Taux de 4.9 m2/l
MasterProtect H 1000	BASF	2001	Silane	Ancien Hydrozo 100
MasterProtect H 400	BASF	2001	Silane à base d'eau	Ancien Enviroseal 40
MasterProtect 8000CI	BASF	2016	Liquide organofonctionnel	Avec inhibiteur de corros
Silane MTQ	Brenntag	2005		
Silres BS Crème	Brenntag	2005		
Chemdur S M 40	Chemdur	2011	Silane	
Weather Seal SL 100	CPD	2003	Alkyl Alkoxy Silane	100% solide
Cipadam S-40	CPD	2014	Silane	
Weather Worker 100% J29A	Dayton Superior	2015	Silane	
Drytrete 40	Dre Industries	1997	Alkyl Alkoxy Silane	Taux de 4.9 m2/l
Baracade Silane 100 C	Euclid Canada	2011	Silane	Taux de 4.9 m2/l (100% si
Planiseal WR 100	Mapei	2015	Silane	
Loxon	Sherwin Williams	2012	Silane	
Sikagard SN100	Sika	2010	Silane	Taux 4,87 m2/l
Sikagard SN40 Lo-VOC	Sika	2010	Silane	Taux de 4,4 m2/l
Solhydseal 40	Solhydroc	2009	Silane	
Solhydseal 100	Solhydroc	2010	Silane	Taux 5,5 m2/l (100% solid
Solhydseal Aqua 40	Solhydroc	2014	Silane	
TexNov Met-40 S	Stef Coatings	2010	Silane	
Termaseal TR 3340	Termarust	2005	Silane	
Rainstopper 140	Tex-Cote	1991	Silane	Taux de 4.9 m2/l
Chemorseal N-100	Tri-Tex	1994	Silane	Taux de 5.5 m2/l (100% so
Chemorseal N-40	Tri-Tex	1991	Silane	
Pentreat 244-40 OTC	W.R.Meadows	2016	Silane	
Pentreat 244-100	W.R.Meadows	2016	Silane	

MEMBRANE POUR JOINTSNorme: Exigence MTQ

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
Bakor Modified Plus NP 180 Tack	Cie Henry Canada	2000	3 mm	Sans granules, autocollan
Bakor Modified Plus NP 180p/p	Cie Henry Canada	2013	3 mm	Sans granules, thermosoud
Armourbond 180	IKO	1997	3 mm	Sans granules, autocollan
Sopralene Flam 180	Soprema	1998	3 mm	Sans granules, thermosoud
Sopralene Flam stick	Soprema	1998	3 mm	Sans granules, autocollan

MEMBRANE D'ÉTANCHÉITÉ EN FEUILLENorme: MTQ 3701

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
Bakor Thermoseal/NP 250 GT5	Cie Henry Canada	1994	A base de S.B.S.	
ArmourBridge-pont	IKO	1993	A base de S.B.S.	
Antirock	Soprema	2001	A base de S.B.S.	
Antirock Starter	Soprema	2017	A base de S.B.S.	

MORTIER CIMENTAIRE EN SAC: Catégorie NNorme: MTQ 3801

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
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MasterEmaco N 423 RS	BASF	1995	Mortier polymère	ancien Emaco FS
MasterEmaco S 440 MC	BASF	2001	Autoplaçant	Ancien LA Repair Mortar
MasterEmaco S 440	BASF	2001	Mortier polymère	Ancien LA40 Repair Mortar
HD 50	Dayton Superior	1993	Polymère et fibre	
Perma Patch VO	Dayton Superior	1993	Ciment et fibre	ancien Day-Chem Perma Pat
Verticoat Supreme	Euclid Canada	1997	Latex acrylique	
Tammspatch II	Euclid Canada	2007	Mortier polymère	
Eucocrete Supreme	Euclid Canada	2012	Mortier au latex	Granulats 10 mm
Eucocrete	Euclid Canada	2012	Inhibiteur de corrosion	Granulats 10 mm
Planitop 15	Mapei	1999	Mortier cimentaire	
Planitop X	Mapei	2008	Mortier polymère	Avec Planicrete AC
Planitop 12	Mapei	1995	Mortier de ciment	
Super-Top	Matériaux King	2015	Mortier polymère	
Sikatop 111 PLUS	Sika	1996	Latex acrylique	
Sikatop 121 PLUS	Sika	1996	Latex acrylique	
Meadow-Crete H	W.R.Meadows	1994	Ciment et fibre	
Sealtight Meadow Crete GPS	W.R.Meadows	2001	Mortier polymère	
Sealtight Meadow-Patch T2	W.R.Meadows	2001	Mortier polymère	

MORTIER CIMENTAIRE EN SAC: Catégorie R

Norme: MTQ 3801

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
MasterEmaco S 488 CI	BASF	2011	Avec inhibiteur de corrosion	Ancien Emaco S88 CI
CPD Fastcrete HS	CPD	2016	Mortier de ciment	
CPD Fastcrete Ultra	CPD	2016	Mortier de ciment	
Concrete Top Supreme	Euclid Canada	1997	Latex acrylique	
Euco Speed	Euclid Canada	1997	Mortier cimentaire	
Thin Top Supreme	Euclid Canada	1997	Latex acrylique	
Lanko 703	Lanko	2004	Mortier de ciment	
Lanko 735	Lanko	2004	Mortier de ciment	
Clavexpress 700	Lanko	2003	Mortier de ciment	
Lankorep 731	Lanko	2003	Mortier de ciment	
Mapecem 202	Mapei	1995	Polymere	
Planitop 23	Mapei	1995	Polymere et fibre	
Planitop 25	Mapei	1999	Mortier polymère	
Fortatop	Produits Daubois	2017		
SikaRepair 223	Sika	1996	Mortier de ciment	
Sikatop 122 PLUS	Sika	1996	Latex acrylique	
Sikatop 123 PLUS	Sika	1996	Latex acrylique	
Sika MonoTop-622 F	Sika	2017		
Structuroc H-Ultra	Solhydroc	2008	Mortier de ciment	
Structuroc V Plus	Solhydroc	2018	Mortier de ciment	Avec polymère liquide V-P
Repar-Mix	Tech-Mix	1999	Mortier de ciment	

MORTIER CIMENTAIRE EN SAC: Catégorie TR

Norme: MTQ 3801

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
Repair Mortar DOT, Rapid Set	Ambex	2001	Mortier de ciment	
Mortier polymère cement-all à retr: Ambex		2016		Avec Ambexcrete SB-23

MasterEmaco T 415	BASF	1993	Mortier de ciment	Ancien Emaco T415
MasterEmaco T 545	BASF	1995	Phosphate magnesium	Ancien Set 45 régulier
MasterEmaco T 545 HT	BASF	1988	Phosphate magnesium	Ancien Set 45 temps chaud
MasterEmaco T 1060	BASF	2001	Mortier de ciment	Ancien 10-60 Rapid Mortar
MasterEmaco T 1061	BASF	2012	Mortier de ciment	Ancien 10-61 Rapid Mortar
CPD Rapidcrete	CPD	2016	Mortier de ciment	
Euco speed MP	Euclid Canada	1996	Phosphate magnesium	
Versaspeed	Euclid Canada	2005	Mortier de ciment	
Structural Concrete ES	Five Star	2008	Mortier de ciment	
Fondag	Lafarge	1994	Ciment fondu	
Magna-Crete	Loctite Fixmaster	2009	Phosphate magnesium	
Planitop 18	Mapei	2002	Mortier de ciment	
RS-S2	Matériaux King	2015	Ciment Rapid Set avec latex	
Sika Pronto 11	Sika	2001	Acrylates	
Sika Set 45	Sika	2003	Phosphate magnesium	
Sikadur LT Grout	Sika	2001	Vinyl esther	
Sikadur VPC	Sika	2001	Béton polymère	
Structuroc H	Solhydroc	1999	Mortier de ciment	
Futura 15	W.R.Meadows	2016	Mortier de ciment	

MORTIER DE MAÇONNERIE

Norme: CSA A179

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
King 1-1-6	Matériaux King	2017	Type N	
Bétomix Plus Type S	Produits Daubois	2017	Type S	
Bétomix Plus Type N	Produits Daubois	2017	Type N	
SikaMur 1-1-6 BrikMix	Sika	2017	Type N	

MOUSSE D'URÉTHANE

Norme: Procédure MTQ

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
Prime Flex 930	Ambex	2000		Uréthane hydrophobe semi-
Concresive 1250 IUG	BASF	2005		Uréthane hydrophobe flexi
Dural Aqua Dam	Euclid Canada	2011		Avec Dural Aquaccelerator
Dural Aqua Dam LV	Euclid Canada	2011		Avec Dural Aquaccelerator
J Thane Flex	Krytex	1995		Uréthane hydrophobe flexi
J-Thane	Krytex	2000		Uréthane hydrophobe semi-
Resfoam HB 45	Mapei	2018		Avec Resfoam HBA 5
Resfoam SS75	Mapei	2018		Avec Resfoam HBA 5
F 1000	Poly-Tech M.P.	2000		Uréthane hydrophobe flexi
H 100	Poly-Tech M.P.	2000		Uréthane hydrophobe semi-
SikaFix PU	Sika	2001		
Chem Semirigid	Solhydroc	2001		Uréthane hydrophobe semi-

PRODUIT D'ANCRAGE DES GOUJONS ET TIRANTS

Norme: ASTM E-488

Note: L'utilisation sous charge de traction soutenue ou en surplomb doit être validée avec le fournisseur (fluage)

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
Ambex AAC	Ambex	1994	Ciment fondu	
Ambex ARC	Ambex	2007	Cimentaire	

MasterEmaco ADH 1420	BASF	1995	Époxy	Ancien Concreive 1420
H.E.S. High Early Strength	CPD	2003	Coulis cimentaire	
Non-Shrink Grout Pre-mix	CPD	2003	Coulis cimentaire	
Dayton J-50	Dayton Superior	1994	Époxy	
Sure Grip High Perf.	Dayton Superior	1995	Coulis cimentaire	
All Weather J51 AW	Dayton Superior	2015	Époxy	Jusqu'à -18 °C
Pro-Poxy 500	Dayton Superior	2016	Époxy	
Chem-Stud Capsule	DeWalt/Powers	2000	Époxy, cartouche de verre	
AC 100 Plus Gold	DeWalt/Powers	2008	Époxy acrylate	
PE 1000 Plus	DeWalt/Powers	2008	Époxy	
Pure50+	DeWalt/Powers	2013	Époxy	
Pure110+	DeWalt/Powers	2013	Époxy	
AC200+	DeWalt/Powers	2016	Époxy	
N.S. Grout	Euclid Canada	1997	Coulis cimentaire	
Euco # 452 Gel	Euclid Canada	2008	Époxy	
Dural Fast Set Epoxy Gel	Euclid Canada	2008	Époxy	
Dural 452 Gel	Euclid Canada	2013	Époxy	
Dural 452 MV	Euclid Canada	2013	Époxy	
HP Anchor Gel	Five Star	2011	Époxy	
RS Anchor Gel	Five Star	2011	Époxy	
Hit Ice	Hilti	2002	Ancrage chimique	Jusqu'à -15 oC
Hit RE-500	Hilti	2001	Ancrage chimique	
Hit HTE 50	Hilti	2009	Époxy	
Hit HY 10 Plus	Hilti	2012	Résine de méthacrylate	
Hit HY 200	Hilti	2012		remplace le Hit HY 150 MA
Hit HY 100	Hilti	2013		
Hit RE-500 V3	Hilti	2015	Ancrage chimique	
Hit RE-100	Hilti	2015	Ancrage chimique	
Ancrage adhésif à capsules HVU	Hilti	2016	Ancrage chimique	Pour tiges filetées
Hit RE-10	Hilti	2018	Ancrage chimique	
Epcon Acrylic 7	ITW Construction Products	1998	Acrylic latex	
Epcon Ceramic 6	ITW Construction Products	1997	Époxy	
Granite 5	ITW Construction Products	1997	Époxy	
Epcon C6+	ITW Construction Products	2015	Époxy	
Epcon A7+	ITW Construction Products	2016	Époxy	Jusqu'à -10°C
Red Head C6+	ITW Construction Products	2017	Époxy	
Planigrout 712	Mapei	2013	Coulis cimentaire	
Planibond AE	Mapei	2015	Époxy	
Planibond AE Fast	Mapei	2016	Époxy	
MS Cable	Matériaux King	2007	Coulis cimentaire	
VEP 600	Outillage Verner 2000	2012	Epoxy	
VT+410	Outillage Verner 2000	2012	Vinylester	
VE 500	Outillage Verner 2000	2015	Époxy	
Target Coulis pour base d'équipement	Produits Daubois	2018	Coulis cimentaire	
Target Coulis à la fumée de silice	Produits Daubois	2018	Coulis cimentaire	
Sika Pronto 11	Sika	2001	Mortier méthacrylate modifié	

Sikadur LT Grout	Sika	2001	Vinyl ester	
Sikagrout 212	Sika	2001	Coulis cimentaire	
Sikagrout 212 HP	Sika	2001	Coulis cimentaire	
Sika AnchorFix-3001	Sika	2014	Epoxy	
Sika AnchorFix-2 Arctic	Sika	2014	Epoxy acrylate (jusqu'à -26°C)	
Sikadur Chemroc 800	Sika	2000	Époxy/acrylate	Ancien Chemroc 800
Sika AnchorFix-2020	Sika	2018	Acrylate époxy (jusqu'à -10°C)	Remplace Sika AnchorFix-2
Set 22 High Strength	Simpson Strong-Tie	1999	Époxy	
AT-XP	Simpson Strong-Tie	2015	Acrylic	
SET-XP	Simpson Strong-Tie	2018	Époxy	
SET-3G	Simpson Strong-Tie	2018	Époxy	
Chemorset 100 M	Tri-Tex	2009	Époxy	
Chemorset 100 G	Tri-Tex	2009	Époxy	
Hac 16	UCAN	1999	Epoxy, cartouche de verre	
Flo-Rok FR5 MAX	UCAN	2003	Époxy acrylate	Essai à -20°C et 23°C
Flo-Rok FR6-SD	UCAN	2013	Époxy	
Poly-Grip	W.R.Meadows	2001	Polyester	
Rezi-Weld GEL	W.R.Meadows	1994	Époxy	

PRODUIT D'INJECTION DE FISSURES

Norme: ASTM C-881

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
Seal Rez EP 0127	Ambex	1995	Type 1,11	Inj. et collage de 2 béton
PN-0665	Ambex	2003	Type IV	Inj. sous pression
MasterInject 1380	BASF	1991	Type 1V	Inj. sous pression (SCB C
MasterInject 1500	BASF	1995	Type 1,11	Inj. sous pression (Concr
Cipadite 25	CPD	2003	Époxy	Inj. sous pression ou gra
Dayton J-56	Dayton Superior	1994	Époxy	
Eucopox Injection Resin	Euclid Canada	2012	Type II	Liaisonnement béton frais
Dural 452 LV	Euclid Canada	2014	Type I et IV	
Epoxy-scel-80	Krytex	1993	Type 1,11	Inj. et liaisonnement béton
Epoxy-scel-300	Krytex	1991	Type 11	Inj. et liaisonnement béton
Epojet LV	Mapei	2015	Type II	
Epojet	Mapei	2016	Type II	
Sikadur 35 Hi-mod LV	Sika	1985	Type 1,11,IV,V	Inj. sous pression ou gra
Sikadur 52	Sika	2001	Type I	Inj. sous pression ou gra
Sikadur 55 SLV	Sika	2001	Type 1,11	Injection de fissures par
Solhyd weld Thixo	Solhydroc	2008	Type I, II	Inj. sous pression ou gra
Solhyd weld Thixo 20	Solhydroc	2008	Type I, II	Inj. sous pression ou gra
Solhyd weld Thixo 50	Solhydroc	2008	Type I, II	Inj. sous pression ou gra
Solhyd weld Low Pressure	Solhydroc	2008	Type I, II	Inj. sous pression ou gra
Chemorset 100LV	Tri-Tex	2007	Type I	Inj. sous pression
Rezi-weld LV	W.R.Meadows	1992	Type 1,11,111	Inj. sous pression

Produit divers

COLLE AU LATEX

Norme: ASTM C 1059

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
Ambex Grout VM / SB-23	Ambex	2003	Styrène-Butadiène	
MasterEmaco A 660	BASF	2005	Acrylique	Ancien Acryl 60
Adhésif au latex	CPD	2001	Styrène-Butadiène	
Day Chem Ad/Bond J40	Dayton Superior	1993	Acrylique	
Flex-Con	Euclid Canada	1997	Acrylique	
Hey'DI SB	Euclid Canada	2008		
DURALPREP A.C.	Euclid Canada	2008	Ciment-Époxy	Collage de deux bétons
Laticrete 3701	Laticrete (Ceratec)	1985	Styrène-Butadiène	
Laticrete 4237	Laticrete (Ceratec)	1985	Styrène-Butadiène	
Laticrete 8510	Laticrete (Ceratec)	1985	Acrylique	
Planibond 3C	Mapei	2003	Ciment-Époxy	
Planicrete AC	Mapei	1993	Acrylique	
Sika Latex R	Sika	2001	Acrylique	
Chemorcrete WR	Tri-Tex	1985	Acrylique	
Bondlock	W.R.Meadows	1995	Polysulfure	Latex deux composants
Intralok	W.R.Meadows	1985	Acrylique	

COLLE ÉPOXY

Norme: ASTM C-881

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
Pro Prime EPX	Adhésifs PROMA	2017	Type II	Liaisonnement de deux bét
EP 0419	Ambex	2005	Type 1, 11	Collage de 2 bétons durci
Prime Rez 1200 Low Mod LV	Ambex	2003	Type II	Liaisonnement
EP 0150	Ambex	2005	Type, 1,11	Injection et collage de 2
EP-1343	Ambex	2003	Type IV	Collage de deux bétons
EP 0127	Ambex	1995	Type 1,11	Collage de deux bétons
MasterEmaco ADH 1420	BASF	1991	Type 1V	Liaisonnement béton frais
MasterEmaco ADH 326	BASF	1995	Type 1	Liaisonnement de deux bét
MasterEmaco ADH 327	BASF	1995	Type 1,1V	Liaisonnement de deux bét
MasterSeal 370	BASF	2011	Type II	Liaisonnement béton frais
MasterEmaco ADH 1090 RS	BASF	2013	Type II	Liaisonnement béton frais
MasterInject 1500	BASF	2013	Type IV	Ancien Concreive Standar
Kemko 009 SP Paste	Chemco	2012	Type II	Liaisonnement béton frais
Cipadite 35	CPD	2003	Type II	Liaisonnement béton frais
Cipadite Gel 15	CPD	2003	Type II	
Sure-Anchor Epoxy (J-50)	Dayton Superior	1993	Type 1,11	Liaisonnement béton frais
Sure Bond J58	Dayton Superior	2014	Type II	Liaisonnement béton frais
Euco # 452 LV	Euclid Canada	1997	Type 1,11,1V,V	
Euco # 452 MV	Euclid Canada	1997	Type 1,11,1V,V	
Dural Fast Set Epoxy LV	Euclid Canada	2008	Type 1,11,1V,V	
Euco # 452 Gel	Euclid Canada	2008	Type 11	Liaisonnement béton frais
Eucopoxy Injection Resin	Euclid Canada	2011	Type II	Liaisonnement béton frais
Dural 452 Gel	Euclid Canada	2013	Type 1 et 11	Liaisonnement béton frais

Dural 452 MV	Euclid Canada	2013	Type 1 et 11	Liaisonnement béton frais
Dural 452 LV	Euclid Canada	2011	Type I et IV	Injection et collage de 2
Epoxy-scel-80	Krytex	1993	Type 1,11	Injection et liaisonnement
Epoxy-Scel-300	Krytex	1991	Type 11	Collage béton frais-durc
Planibond EBA	Mapei	1993	Type 1,11	Collage, ancrages et fiss
Epojet LV	Mapei	2015	Type II	Liaisonnement béton frais
Epojet	Mapei	2016	Type II	Injection de fissures
Sikadur 30	Sika	2001	Type IV	Utilisé avec le CarboDur
Sikadur 31 Hi-mod gel	Sika	1991	Type 1,11,IV,V	Ancrage et collage de deu
Sikadur 32 Hi-mod	Sika	1991	Type 1,11,IV,V	Ancrage et collage de deu
Sikadur 55 SLV	Sika	2001	Type 1,11	Injection de fissures par
Chemorlit	Tri-Tex	1986		Adhésif pour le roc
Chemorbond	Tri-Tex	1984	Type 11	Liaisonnement béton frais
Chemorset 100 G	Tri-Tex	1987	Type 1	Collage de deux bétons du
Chemorset 100 M	Tri-Tex	1984	Type 1,11	Fissures,collage béton fr
Chemorset 100LV	Tri-Tex	2007	Époxy,type I et II	
Chemorbond 100	Tri-Tex	2007		
Rezi-weld Gel	W.R.Meadows	1993	Type 1,11	Liaisonnement béton durci
Rezi-weld 1000	W.R.Meadows	1993	Type 1,11,111	Collage et ancrages
Rezi-weld rapid set	W.R.Meadows	1993	Type 1,111	Ancrages

COULIS EPOXY

Norme: MTQ 3901

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
Masterflow 648	BASF	2016	Époxy	
Cipadite E-500 Grout	CPD	2003	Époxy	
J55 Epoxy Grout	Dayton Superior	2014	Époxy	
E3-F	Euclid Canada	2011		Granulats 3 mm diamètre
Coulis époxyde (EG)	Hilti	2010		
Sikadur 42 Grout Pak Multi-Flo	Sika	2001	Époxy	
Sikatop Armatec 110	Sika	1991	Ciment-Époxy	Collage de deux bétons
REZI-WELD Epoxy grout patch	W.R.Meadows	1995	Époxy	

ENDUIT PROTECTEUR POUR LES ARMATURES

Norme: ASTM B-117

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
MasterEmaco ADH 326	BASF	1992	Brouillard salin	Ancien Concrecive LPL
MasterEmaco P 124	BASF	2000	Brouillard salin	Ancien Emaco P 24
MasterProtect P 8100 AP	BASF	2012	Brouillard salin	Ancien Zincrich Rebar Pri
Perma Prime 3C	Dayton Superior	2015	Brouillard salin	Protection des armatures
Dural Prep AC	Euclid Canada	2008	Brouillard salin	Protection de l'armature
Planibond 3C	Mapei	2003	Brouillard salin	Protection de l'armature
Mapefer 1K	Mapei	2011	Brouillard salin	Protection de l'armature
Sikatop Armatec 110	Sika	1995	Brouillard salin	Protection de l'armature
Chemorclad 9600	Tri-Tex	2007	Brouillard salin	Protection des aciers d'a

IMPERMÉABILISANT À BÉTON : Siloxane ou Silane - Solide < 40%

Norme: MTQ 3601

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
MasterProtect H 200	BASF	2012	Silane	Ancien Enviroseal 20

HMRC	C.I.R.	2001	
Chemdur S M 20	Chemdur	2011	Silane
Drytrete 30	Dre Industries	1990	Alkyl Alkoxy Silane
Protekrete 25	Dre Industries	1990	Siloxane
Euco-Guard 200	Euclid Canada	1998	Siloxane
Baracade WB 244	Euclid Canada	2011	Siloxane-silane
Krystol Hydrostop	Krytex	1989	Silane-siloxane
Hydrofuge NC	Poly Protec	2001	
Ro-Con AQ-15	Rolfquo	2009	Siloxane
Ro-Con AQ-40	Rolfquo	2009	Siloxane
Bio-Neutra	Scelco	1991	Polysiloxane
Bio-Neutra plus	Scelco	1991	Polysiloxane
Hydrofuge HP	Techniseal	1993	Siloxane
Hydrofuge TS10	Techniseal	1991	Siloxane
Rainstopper 120	Tex-Cote	1991	Silane
Rainstopper 1500	Tex-Cote	1991	Polysiloxane
Chemorseal N-20	Tri-Tex	1991	Silane
Gem-Gard SL-ST (VOC)	W.R. Meadows	2017	Silane

INHIBITEUR DE CORROSION

Norme: ASTM C 494-S

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
MasterLife CI 222	BASF Canada	1997	Rheocrete 222 +	Composé organique
MasterLife CI 30	BASF Canada	1999	Rheocrete CNI	Nitrite de Calcium 30%
MCI 2000	Cortec	1996	Adjuvant à béton	Esther
Eucon CIA	Euclid Canada	2000	Adjuvant à béton	Nitrite de Calcium 30%
DCI	GCP Canada	1996	Adjuvant à béton	Nitrite de Calcium 30%
DCI-S	GCP Canada	2012	Adjuvant à béton	Nitrite de Calcium 30%
SIKA CNI	Sika	2012	Adjuvant à béton	Nitrite de Calcium 30%

MASTIC D'ÉTANCHÉITÉ 1 COMPOSANT

Norme: ASTM C 920 Type S

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
Adseal	Adfast	2015	Silicone	Grade NS, Classe 50
MasterSeal NP1	BASF	1993	Polyuréthane	Grade NS, Classe 25 (Sono
MasterSeal SL1	BASF	1990	Polyuréthane	Grade P, Classe 25 (Sonol
Dow Corning 890 SL	Dow Chemical	1994	Silicone	Grade P, Classe 100/50
Dow Corning 888	Dow Chemical	1989	Silicone	Grade NS, Classe 100/50
Eucolastic 1 Gun Grade	Euclid Canada	2007	Polyuréthane	Grade NS, Classe 25
Eucolastic 1 Pourable	Euclid Canada	2007	Polyuréthane	Grade P, Classe 25
Eucolastic 1NS	Euclid Canada	2013	Polyuréthane	Grade NS, Classe 35
Eucolastic 1SL	Euclid Canada	2013	Polyuréthane	Grade P, Classe 50
Mapectex P1	Mapei	2013	Polyuréthane	Grade NS, Classe 25
Mapectex P1 SL	Mapei	2013	Polyuréthane	Grade P, Classe 25
Sikaflex 15 LM	Sika	1989	Polyuréthane	Grade NS, Classe 25
Sikaflex 1a	Sika	1982	Polyuréthane	Grade NS, Classe 25
Sikaflex 1C SL	Sika	2001	Polyuréthane	Grade P, Classe 25
Sikasil WS-290	Sika	2012	Silicone	Grade NS, Classe 100/50
Sikasil WS-295	Sika	2012	Silicone	Grade NS, Classe 50

Sikasil 728 SL	Sika	2012	Silicone	Grade P, Classe 100/50
Sikasil 728 NS	Sika	2012	Silicone	Grade NS, Classe 100/50
Spectrem 800	Tremco	2006	Silicone	Grade NS, Classe 100/50
Vulkem 116	Tremco	1983	Polyuréthane	Grade NS, Classe 25
Vulkem 200	Tremco	1984	Polyuréthane	1 composant
Vulkem 45	Tremco	1982	Polyuréthane	Grade P, Classe 25
Spectrem 900 SL	Tremco	2006	Silicone	1 composant

MASTIC D'ÉTANCHÉITÉ 2 COMPOSANTS

Norme: ASTM C 920 Type M

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
MasterSeal NP2	BASF	1990	Polyuréthane	Grade NS, Classe 25 (Sono
MasterSeal SL2	BASF	1993	Polyuréthane	Grade P, Classe 25 (Sonol
Neo-Seal	Euclid Canada	2007	Polyuréthane	2 composants
Eucolastic II	Euclid Canada	2007	Polyuréthane	Grade NS, Classe 25
Eucolastic 2NS	Euclid Canada	2013	Polyuréthane	Grade NS, Classe 50
Eucolastic 2SL	Euclid Canada	2013	Polyuréthane	Grade P, Classe 25
Sikaflex 2C NS EZ	Sika	2005	Polyuréthane	Grade NS, Classe 25
Sikaflex 2C SL	Sika	2005	Polyuréthane	Grade P, Classe 25
Vulkem 202	Tremco	1995	Polyuréthane	2 composants
Vulkem 245	Tremco	1984	Polyuréthane	2 composants
Sealtight CM-60	W.R.Meadows	1982	Polyuréthane	2 composants
Sealtight GARDOX	W.R.Meadows	1982	Polyuréthane	Grade P, Classe 25
Sealtight Pourthane	W.R.Meadows	1986	Polyuréthane	Grade P, Classe 25

MEMBRANE D'ÉTANCHÉITÉ - Bitume caoutchouté

Norme: Exigence MTQ

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
Superflex 025	Bitumar	1988		
Bakor 790-11	Cie Henry Canada	1986		
Hydrotech 6125	Hydrotech	1978		
Tremproof 6100	Tremco	2001	ancien Tremproof 150	
L-73-R	W.R.Meadows	1978		

MEMBRANE D'ÉTANCHÉITÉ, Film mince adhérent au support

Norme: MTQ ET LCPC

NOM	FABRICANT	ANNÉE	DESCRIPT	REMARQUE
Sinoprene 2000	Elastomer-Tec	1993		Polyurethane
Eliminator	GCP / Stirling Lloyd	1992		Méthylméthacrylate



Annex C
Cathodic protection



ANNEX C

CATHODIC PROTECTION

Photographs taken at different times at the La Romaine wharf

The photographs are provided to give a general view of the site requiring intervention by the Contractor and do not necessarily reflect the actual situation at the time of tenders. A site visit is recommended before determining the work to be done.

Photographs taken 2010



Rectifiers R2, R4 and R5-7 installed in the electrical container.



HSS for anodes main câbles of circuits A' B, C et D.



Rectifier 1-3 (in oil container)

Photographs taken 2017



HSS at end of the wharf.



Electrical pannel (AC) and RMU.



Photographs taken 2019 and 2020



Examples of main anodes cables and HSS repairs.