

**Part 1 General**

**1.1 LOCATION OF WORK**

- .1 The work covered by this contract include the partial demolition of sheet-pile walls, the demolition of the wooden dock of the river Cap-Des-Rosiers, the consolidation of the rock pile walls partially demolished consolidation by riprap jetties, construction of rock riprap by the location of the river dock Cap-Des-Rosiers, decontamination of soil from a categorized AB and protection work of bridge abutments Whalen sector delivery in state of the steel structure supporting the deck, as shown on Plan RM13008C. Work will be performed in the harbour of Cap-Des-Rosiers.

**1.2 REQUIREMENTS C.S.S.T.**

- .1 The Contractor shall submit the documentary evidence itself and its subcontractors have complied with the requirements of the Commission on Health and Safety of the Quebec Labour.
- .2 Under the provisions of the Act respecting occupational health and safety in the province of Québec (RSQ, chapter S-2.1) and only for the purposes of the said Act, it is up to the Contractor to take the one hand from the beginning of work, the role and duties of prime contractor as stated in the said Act, in addition to its obligations as a result of an employer assigned to it under that Act status and, secondly, its obligations with regard to health and safety.

**1.3 BEGINNING AND COMPLETION OF WORK**

- .1 The repairs will take place in two phases and mainly include, but are not limited to:
  - .1 Phase 2 starting in May 2014 and ending June 30, 2014:
    - .1 All painting and replacing bolts on the structure of the bridge Whalen.
    - .2 Laying topsoil, hydro seeding and final cleaning of the site.
  - .2 Phase 1 beginning after September 3, 2013 and ending March 31<sup>st</sup>, 2014:
    - 1. All work other than that indicated in phase 2

**1.4 DESCRIPTION OF EXISTING STRUCTURES**

- .1 The inner harbor is mainly composed of a dock piling. The latter, built in 1948, consists of two parallel sheet pile walls and a pad made of beams and slabs of reinforced concrete, a set of ledgers and steel rods.
- .2 The South Jetty is composed of a dock Berlin Wall. The latter, built in 1979 is composed of two parallel walls Berlin comprising a set of steel piles and concrete wall, a system of steel beams and reinforced concrete slabs and a set of ledgers and of steel rods.
- .3 The North Pier is composed of a dock Berlin wall and a sheet pile wall. The pier, built in 1979, is composed of a set of steel beams and concrete slabs and a set of ledgers and steel rods.
- .4 River dock Cap-des-Rosiers, built above the bridge of the Cap-des-Rosiers river. The untreated wood structure was built in the 1960s.

- .5 The bridge Whalen was built in 1985. The concrete abutments of the original construction in 1942 have remained in place. They represent the retaining anchors beneath the bridge deck

## **1.5 DESCRIPTION OF WORK**

### Redevelopment of the harbour

- .1 Perform the partial demolition of sheet-pile walls, as indicated in the plan. This includes the partial demolition of sheet-pile walls, demolition of concrete beams and slabs of concrete as well as the provision of off-site excavation and demolition materials. Also, part of backfill type stone-run will be integrated into the work as shown on the plan.
- .2 Perform a consolidation of the sheet-pile walls using different sizes of stones, as indicated in the plan.
- .3 Perform consolidation of the embankment between the North Pier and bridge, using different sizes of stones and panels articulated concrete blocks, as shown on Plan RM13008C.
- .4 Perform consolidation of the rock outside Berlin Wall of South pier. The latter will be done by the excavation of existing equipment and installation of stones of different sizes, as indicated in the plan.
- .5 Perform consolidation of wall rock pile the North Pier. This consolidation will be carried out with stones of different sizes, as indicated in the plan.
- .6 Perform the complete demolition of the wharf Whalen upstream of Bridge Cap-des-Rosiers River. Perform off-site disposal of excavated materials and scrap materials related to the demolition of the wharf.
- .7 Perform construction by rock riprap at the location where the platform of the Cap-des-Rosiers River was demolished. This ballast will be built with stones of different sizes and panels articulated concrete blocks, as shown in the plan.
- .8 Perform the dismantling of part of the existing fence and make the relocation of a portion thereof where indicated.
- .9 Effect removal of the illumination system and concrete base within the limits of the work.
- .10 Perform the construction of a concrete wall in the area of the filling, as shown on plan.
- .11 Perform the construction of a wooden wheel guard attached to the existing piles and the concrete wall to be built.
- .12 Perform excavation of contaminated materials and dispose off-site, as indicated in the plan near the base of concrete of old oil tank. These contaminated materials are characterized AB.
- .13 No traffic will be allowed on the piers and the north and south throughout the construction period.

- .14 To put in place the topsoil and hydroseeding the locations shown on the plan. Monitoring and maintenance after hydroseeding to ensure the growth of vegetation.
- .15 Remove and replace concrete slabs required for the installation of riprap, at the junction of the North and South piers.
- .16 Provide and implement an extension of the storm sewer as indicated in the plan.
- .17 Work on the bridge of Whalen sector. These works are represented on pages 8 to 16 of the Plan:
  - .1 Repair: Repair bases of old concrete abutments by installing a suitable form.
  - .2 The establishment of a protective coating (ballast) with geotextile membrane upstream of the bridge near the abutment #2.
  - .3 The removal and replacement mattresses articulated concrete block after repair of the seat.
  - .4 The establishment of a ballast with geotextile membrane downstream of the bridge on both sides as indicated on plan.
  - .5 Demolition of existing stone wall cemented located near the upstream side of the abutment 1 and the construction of a new wall type wall weight sandbag cement.
  - .6 Replacement bolts and nuts bracing support beams devices.
  - .7 Applying a protective paint the same color as the existing areas affected by rust beams and bracing.
  - .8 Application of protective paint the same color as the existing anchor bolts installed in the pile heads and devices supporting beams.

## **1.6 PROJECT PHASES**

- .1 Maintain access for the fire-fighting role against the fire and also provide the means to fight against the fire.

## **1.7 USE OF PREMISES BY CONTRACTOR**

- .1 The site can be used without restriction from September 3<sup>rd</sup>, 2013 until substantial completion.
- .2 The use of the premises is restricted to necessary areas to perform the work and storage in order to enable:
  - .1 occupation by the Departmental Representative.
- .3 Coordinate the use of the premises as directed by the Departmental Representative.
- .4 Find, outside Forillon Park, any additional work or storage areas that may be required and assume any related costs.
- .5 Repair or replace as directed by the Departmental Representative, for connection to the existing structure or adjacent work, or to harmonize with them, parts of the existing structure that has been modified during construction.

- .6 Once the work is completed, the existing structure must be in equal or superior to the state it had before the work of this project.

## **1.8 OCCUPANCY OF PREMISES BY THE DEPARTMENT REPRESENTATIVE**

- .1 Work with Departmental Representative to the scheduling of work in order to reduce conflict and to facilitate the use of the premises by the latter.

## **1.9 MATERIALS PROVIDED BY THE DEPARTMENT REPRESENTATIVE**

- .1 Panels articulated concrete blocks :
  - .1 40 panel blocks of concrete Armaflex provided by the Departmental Representative. These panels, already in the harbour of Cap-des-Rosiers will be used for slop stabilization, as indicated in the plan.
  - .2 The handling panels articulated concrete blocks is provided by the Departmental Representative and is already present in the harbour at Cap-des-Rosiers. This device should be used for handling concrete panels. At the end of the work, the handling device shall remain the property of the Departmental Representative and must be stored at the work site at the place determined by the Departmental Representative.
- .2 Different sizes of stones:
  - .1 Stone located at the sandpit of Allen Dumaresq: this pit, located on lot #3 145 461 cadastre of Quebec in the riding of Gaspé is the property of Allen Dumaresq.
    - a) Stone 8 to 12 m.t. : 4609 m.t.
    - b) Stone 100 to 300 kg : 2687 m.t.
  - .2 Stone near the harbour at Cap-des-Rosiers: the location of the various categories available near the harbour stones are identified in the plan.
    - a) Stone 8 to 12 m.t. : 3230 m.t.
    - b) Stone 1 to 3 m.t. : 3500 m.t.
    - c) Stone 1 to 1.5 m.t. : 5018 m.t.
    - d) Stone 300 to 450 mm : 3420 m.t.
    - e) Stone 100 to 300 kg : 3322 m.t.
    - f) Stone mine : 500 m.t.
  - .3 The amount of stones to carry out the work according to the dimensions shown on the plan are:
    - a) Stone 8 to 12 m.t. : 8139 m.t.
    - b) Stone 1 to 3 m.t. : 5000 m.t.
    - c) Stone 1 to 1.5 m.t. : 3600 m.t.
    - d) Stone 300 to 450 mm : 350 m.t.
    - e) Stone 100 to 300 kg : 3322 m.t.
    - f) Stone mine : 4300 m.t.

## **1.10 CHANGES, ADDITIONS, OR REPAIRS TO EXISTING BUILDING**

- .1 Execute work without disrupting as possible the normal use of the premises. Make the necessary arrangements with the Departmental Representative to facilitate works.

### **1.11 EXISTING UTILITIES SERVICES**

- .1 Before interrupting utility services, inform the Departmental Representative and the utility companies involved, and obtain the necessary permits.
- .2 Provide alternative routes for the movement of people and vehicles.
- .3 Before starting work, define the extent and location of utility lines that are in the work area and notify the Departmental Representative.
- .4 Submit the approval of Departmental Representative a schedule for stopping or closing facilities or active works, including the interruption of communications services or the power supply. Comply with the timetable approved and informing affected by these drawbacks parties.
- .5 Install gateway site for crossing trenches to maintain pedestrian traffic.
- .6 When pipes are not listed utilities are discovered, immediately notify the Departmental Representative and write them down.
- .7 Record the location of utility lines which are maintained, displaced or abandoned

### **1.12 REQUIRED DOCUMENTS**

- .1 Keep a copy of the following documents for each site:
  - .1 Contract drawings
  - .2 Work
  - .3 Addenda
  - .4 Shop drawings reviewed
  - .5 List of workshop drawings unreviewed
  - .6 Change orders
  - .7 Other changes to the contract
  - .8 Reports of tests on site
  - .9 Copy of approved implementation schedule
  - .10 Plan health and safety and other documents relating to security
  - .11 Other documents indicated.

### **1.13 REFERENCES**

- .1 Benchmark (BM) to be used for construction purposes is shown on the plan.
- .2 All elevations shown on the plan are referred to chart datum.
- .3 The tidal range is usually 2.20 meters, yet it advises contractors to consult tide tables published by the Departmental of Fisheries and Oceans Canada to ensure the effect of tides on the proposed work.
- .4 Vertical reference result of a calculation of approximate coordinates of the datum by applying a correction of 0.993 meter geodetic network (S.CO.PQ.) from the geodetic point 99KO180. This correction provides the tidal elevation in relation to the data shown in terms RM13008C.

**1.14           OBTAIN MATERIALS**

- .1       The Contractor shall provide, in this submission, purchasing, production, transportation of all materials to complete the work required for plans and specifications with the exception of those listed in section 1.9.1 and 1.9.2.

**1.15           MATERIALS PROVIDED TO DEPARTMENT REPRESENTATIVE**

- .1       Chain fences removed, including horizontal pipes and corrugated PVC pipe at the top of the fence located in the southwest of the basin. These materials must be delivered to the Operational Centre Parks Canada Agency, located at 1501 Boulevard Forillon.
- .2       Materials excavated soil along the north and south piers at the site consolidations rockfill remain the property of the Departmental Representative. The materials will be transported along the coastal road near the Carrick Memorial and highway 132.

**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                REFERENCES**

- .1        Not used.

**1.2                MEASURING PROCEDURE**

- .1        Provision for labour, materials, tools, equipment, protection, transportation, administrative overhead, profit margin and necessary financing, etc., to complete the work stipulated in this project shall be included in each of the items listed below, except where otherwise indicated.
- .2        The procedure for measuring the categories of labour, tools and materials which constitute the work as follows:

- .1        Repair Harbour in reference to the leaves 1 to 7 plan RM13008C.

- .1        Part 1: Works fixed price:

- .1        Position #1 – Organization site:

- .1        This item will be paid as a firm fixed price. The bid price shall include all costs required for on site installation including office, equipment and labour. Also include all items from section 01 of the specifications not covered on other sections.

- .1        The site organization refers to all documents of plans and specification.

- .2        Position #2 - Partial Wharf demolition and Pier head excavation:

- .2        This position will be measured comprehensively and includes equipment and labor necessary to perform the demolition, excavation and backfill the dismantling of various existing structures to be demolished, as indicated in the plan. Recovering a portion of stone fill through from the existing structure and reused in new construction. Also, it is included to remove and replace concrete slabs on the south and north pier for laying riprap. The bid price will also include shipping offsite disposal costs of materials and recovery of gravel from the seabed along the jetties. Also, it is included removal of 9 concrete bases with 7 lights.

- .3        Position #3 – Stone 8 to 12 m.t.:

- .3        This position will be measured overall and include equipment and labor required to perform the work of consolidation of riprap. The bid price shall include all costs required to perform excavation of pier head, transport on and off site of stones and wall consolidation with recuperated stones, as shown on drawings. Disposition fees are also included in this item. The bid price must also include the loading, transport from different sites storage and the establishment of the stone 8-12 metric tons provided by the Departmental Representative.

.4 Position #4 – Stone 1 to 3 m.t.:

This position will be measured overall and include equipment and labor required to perform the work of consolidation of riprap. The bid price shall include all costs required to perform excavation of pier head, transport on and off site of stones and wall consolidation with recuperated stones, as shown on drawings. Disposition fees are also included in this item. The bid price must also include the loading, transport from different sites storage and the establishment of the stone 1 to 3 metric tons provided by the Departmental Representative.

.5 Position #5 – Stone 1 to 1.5 m.t.:

This position will be measured overall and include equipment and labor required to perform the work of consolidation of riprap. The bid price shall include all costs required to perform excavation of pier head, transport on and off site of stones and wall consolidation with recuperated stones, as shown on drawings. Disposition fees are also included in this item. The bid price must also include the loading, transport from different sites storage and the establishment of the stone 1 to 1.5 metric tons provided by the Departmental Representative.

.6 Position #6 – Stone 300 to 450 mm:

This position will be measured overall and include equipment and labor required to perform the work of consolidation of riprap. The bid price shall include all costs required to perform excavation of pier head, transport on and off site of stones and wall consolidation with recuperated stones, as shown on drawings. Disposition fees are also included in this item. The bid price must also include the loading, transport from different sites storage and the establishment of the stone 300 to 450 mm provided by the Departmental Representative.

.7 Position #7 – Stone 100 to 300 kg:

This position will be measured overall and include equipment and labor required to perform the work of consolidation of riprap. The bid price shall include all costs required to perform excavation of pier head, transport on and off site of stones and wall consolidation with recuperated stones, as shown on drawings. Disposition fees are also included in this item. The bid price must also include the loading, transport from different sites storage and the establishment of the stone 100 to 300 kg provided by the Departmental Representative.

.8 Position #8 – Pit run stones:

This position will be measured overall and include equipment and labor required to perform the work of consolidation of riprap. The bid price shall include all costs required to perform excavation of pier head, transport on and off site of stones and wall consolidation with recuperated stones, as shown on drawings. Disposition fees are also included in this item. The bid price must also include the loading, transport from different sites storage and the establishment of the pit run stones provided by the Departmental Representative.



- .9      Position #9 – Articulated panels of concrete stone blocks:  
This position will be measured overall and include equipment and labor required to perform the work of consolidation of riprap. The bid price shall include all costs required to perform excavation of pier head, transport on and off site of stones and wall consolidation with recuperated stones, as shown on drawings. Disposition fees are also included in this item. The bid price must also include the loading, transport from different sites storage and the establishment of the articulated panels of concrete stone blocks provided by the Departmental Representative.
- .10     Position #10 – Geotextile type I:  
This position will be measured overall and include equipment and labor required to perform the work of consolidation of the geotextile of type I, as indicated in the plan. It will include the supply, transportation and installation of this engineering fabric.
- .11     Position #11 – Geotextile type II:  
This position will be measured overall and include equipment and labor required to perform the work of consolidation of the geotextile of type II, as indicated in the plan. It will include the supply, transportation and installation of this engineering fabric.
- .12     Position #12 – Storm sewers:  
This position will be measured overall. It will include the supply of the pipes, concrete, geotextile, stone 14.5 mm of diameter, accessories and connection to the existing network at the location indicated in the plan.

.2      Part 2: Work unit prices:

- .1      Position #1 – Concrete walls:  
This position will be measured in linear meter and included equipment and labor necessary to perform the work, such as concrete, reinforcing steel, anchor bolts, the formwork, the ripening, finishing, tools, implementation and installation, as described in the plans and specifications.
- .2      Position #2 – Wooden railing:  
This position will be measured in linear meter and included equipment, material and labor necessary to perform the work, such as the wooden pieces 254 x 254, the training of the racquet bevel, drilling parts, wood treatment, bolts, iron L and etles accessories.
- .3      Position #3 – Stone 8 to 12 m.t.:  
This position will be measured in linear meter and includes the provision of the missing stone to work, the equipment, material and labor necessary to perform the establishment of the 8 to 12 m.t. of stones, as mentioned in the plans and specifications. This position includes the production, transportation, weighing and establishing the item.
- .4      Position #4 – Stone 1 to 3 m.t.:  
This position will be measured in linear meter and includes the provision of the missing stone to work, the equipment, material and

labor necessary to perform the establishment of the 1 to 3 m.t. of stones, as mentioned in the plans and specifications. This position includes the production, transportation, weighing and establishing the item.

.5 Position #5 – Pit run stones:

This position will be measured in linear meter and includes the provision of the missing stone to work, the equipment, material and labor necessary to perform the establishment of the pit run stones, as mentioned in the plans and specifications. This position includes the production, transportation, weighing and establishing the item.

.6 Position #6 – Stone Mg-20:

This position will be measured in linear meter and include the supplies, the equipment, the material and labor necessary to perform the establishment of the stone MG-20, as mentioned in the plans and specifications. This position includes the production, transportation, weighing and establishing the item, levelling and material compaction.

.7 Position #7 – Stone 25 to 150 mm:

This position will be measured in linear meter and include the supplies, the equipment, the material and labor necessary to perform the establishment of the stone 25 to 150 mm, as mentioned in the plans and specifications. This position includes the production, transportation, weighing and establishing the item, levelling and material compaction.

.8 Position #8 – Excavation of contaminated materials:

This position will be measured in linear meter and include the supplies, the equipment, the material and labor necessary to make the decontamination works in the zone of the old hydrocarbon tank as indicated on the plan. This position includes the excavation, transportation and disposition in a secure and accepted site, the contaminated materials of A-B category.

.2 Protection works abutments and rehabilitation of the steel structure of the bridge  
Whalen references to sheets 8 to 16 plan RM13008C.

.1 Part 1: Works fixed price:

.1 Position #1 – Removal, recovery and replacement of guardrails:

This position will be measured globally. The price includes the cost of labor of all materials needed to complete the execution of the work, including, without limitation, equipment, removal and recovery of existing slides, supply and implementation of materials for laying of existing slides, anchors and all expenses incident to the work.

.2 Position #2 – Steel surface to be repaired:

This position will be measured globally. The price includes mainly the cost of the following items without limitation:

- .1 All that is described in section 099719 “Repainting exterior metal surface” such as surface preparation, the measures environmental protection (containment, recovery, transportation and disposal of solid and liquid waste), the

- supply of materials and equipment needed, implementation and any incidental expenses;
- .2 Everything that is described in the plan.
- .3 Position #3 – Replacements of bolts, nuts and washers for structural steel:  
This position will be measured globally. The price includes mainly the cost of the following items without limitation:
  - .1 All that is described in section 051233 “Steel for bridge construction”;
  - .2 Every thing that is described in the plan;
  - .3 Supplies of material and equipment, the labor and all expenses related to the work.
- .4 Position #4 – Repair bases of old concrete abutments:  
This position will be measured globally. The price includes mainly the cost of the following items without limitation:
  - .1 All that is described in section 031000 “Concrete formwork and accessories”;
  - .2 All that is described at the section 024199 “Demolition – minor works”;
  - .3 All that is described in section 051233 “Steel for construction of bridges”;
  - .4 All that is described in section 033000 “Poured concrete on place”;
  - .5 All that is described in section 312333.01 “Excavation, digging, trenching and backfilling” as the supply of the material and equipment is necessary, excavation regardless of the land, protection of the existing structures and works, backfilling, the rented equipment, removal of the exceeding level from the excavation, there transportation, there labor, the filling, the transitions, including also all expenses related to the works;
  - .6 The supply of all that material and equipment necessary to complete the execution of this project, the concrete demolition, the labor, the execution, concrete curing, the correction of the surface, the protection when it’s either hot or cold, concrete finishing, installation and removal of formwork and shoring (including accessories), the supply and installation of reinforcement (including mounting frames), setting a disposal of demolition materials and any expenses incidental to the work.
- .5 Position #5 – Cofferdams and pumping:  
This position will be measured globally. The price includes mainly the cost of the following items without limitation:
  - .1 All that is described in section 312333.01 “Excavation, trenching and backfilling”;
  - .2 The supply of the material and equipment necessary to complete the execution of the work, the labor, the excution

the excavation and the transportation of the equipment, loading and consolidation, development of cofferdam, dewatering of excavations and any expense incident to work.

.6 Position #6 – Demolition of stone wall and cemented wall construction weight sandbag cement:

This position will be measured globally. The price includes mainly the cost of the following items without limitation:

- .1 All that is described in section 024199 “Demolition – Minor works”;
- .2 All that is described in section 312333.01 “Excavation, trenching and backfilling” such as the supply of the materials and equipment necessary, excavation without protection of existing structures of the land, backfilling, borrowing materials, removal of surplus material from the excavation, transportation, implementation, compaction, transitions and any expense incident to work;
- .3 The shipping, the transportation and the disposition in a appropriate site as required by regulations.

.7 Position #7 – Riprap and repair the seat mattresses articulated concrete blocks:

This position will be measured globally. The price includes mainly the cost of the following items without limitation:

- .1 All that is described in section 313700 “Riprap blanket”;
- .2 All that is described in section 312333.01 “Excavation, trenching and backfilling” as requested by the materials supply (except the stone 100-300 kg and the stone 25-150 mm that are paid in another measuring position) and equipment necessary, excavation without protection of existing structures on the land, backfilling, borrowing materials, removal of surplus material from the excavations, transportation, implementation, compaction, transitions and any expense incident to work;
- .3 All that is described in section 313219.01 “Geotextiles”;
- .4 The supply for the material and equipment necessary, the labor, the implementation, the transportation and storage of materials, assembly of the water wall, tie rods, pins, and other accessories, the fabric, cleaning and levelling of the surface to be covered, and any incidental expenses in the proceedings;
- .5 Removal and replacement mattresses articulated concrete blocks after reshaping the land and establishment of the membrane geotextile and stone 25 to 150 mm.

**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**

- .1        Project meetings will be throughout the progress of the work
- .2        Departmental Representative organize meetings and will be responsible for setting the hours, to prepare and distribute report

**1.3                PRECONSTRUCTION MEETING**

- .1        Within 15 days after notice of acceptance of offer, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
- .2        Departmental Representative, Contractor, major Subcontractors, field inspectors and PCA Manager will be in attendance.
- .3        Departmental Representative establish time and location of meeting and notify parties concerned minimum 5 days before meeting.
- .4        Agenda to include:
  - .1        Appointment of official representative of participants in the Work.
  - .2        Schedule of Work: Bar (GANTT) Chart.
  - .3        Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
  - .4        Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities.
  - .5        Delivery schedule of specified equipment.
  - .6        Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.
  - .7        Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
  - .8        Products provided by the Departmental Representative.
  - .9        Record drawings in accordance with Section 01 33 00 - Submittal Procedures.
  - .10      Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.
  - .11      Monthly progress claims, administrative procedures, photographs, hold backs.
  - .12      Appointment of inspection and testing agencies or firms.

**1.4                PROGRESS MEETINGS**

- .1        Departmental Representative schedule progress meeting each 2 weeks during course of Work.
- .2        Contractor involved in Work, Departmental Representative and field inspector are to be in attendance.

- .3 Departmental Representative notify parties minimum 5 days prior to meetings.
- .4 The Departmental Representative drafts the minutes of these meetings and forwarded to participants and to absent parties thereof, within five (5) days after the holding of each.
- .5 Agenda to include the following:
  - .1 Review, approval of minutes of previous meeting.
  - .2 Review of Work progress since previous meeting.
  - .3 Field observations, problems, conflicts.
  - .4 Problems which impede construction schedule.
  - .5 Review of off-site fabrication delivery schedules.
  - .6 Corrective measures and procedures to regain projected schedule.
  - .7 Revision to construction schedule.
  - .8 Progress schedule, during succeeding work period.
  - .9 Review submittal schedules: expedite as required.
  - .10 Maintenance of quality standards.
  - .11 Review proposed changes for affect on construction schedule and on completion date.
  - .12 Other business.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1            General**

**1.1               RELATED SECTIONS**

- .1       Section 01 11 01 – Work Related General Information.
- .2       Section 01 35 29.06 – Health and Safety Requirements.
- .3       Section 01 35 43 – Environmental Procedures.
- .4       Section 01 45 00 – Quality control

**1.2               MANAGEMENT CONSIDERATIONS**

- .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 specifications 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.

**1.3               SHOP DRAWINGS AND PRODUCT DATA**

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



- .2 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.
- .3 Allow 5 days for Departmental Representative's review of each submission.
- .4 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.
- .5 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.
- .6 Accompany submissions with transmittal letter, in duplicate, containing:
  - .1 Date;
  - .2 Project title and number;
  - .3 Contractor's name and address;
  - .4 Identification and quantity of each shop drawing, product data and sample;
  - .5 Other pertinent data.
- .7 Submissions include:
  - .1 Date and revision dates;
  - .2 Project title and number;
  - .3 Name and address of:
    - .1 Subcontractor;
    - .2 Supplier;
    - .3 Manufacturer.
  - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with the specifications;
  - .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 Capacities;
    - .5 Performance characteristics;
    - .6 Standards;
    - .7 Operating weight;
    - .8 Wiring diagrams;
    - .9 Single line and schematic diagrams;
    - .10 Relationships to adjacent work.

- .8 After Departmental Representative's review, distribute copies.
- .9 Submit 3 prints of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.
- .10 Submit 3 copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.
- .11 Submit 3 hard copies of the manufacturer established in sections techniques and specifications required by the Departmental Representative.
  - .1 Preprinted documents describing the method of installation of products, equipment and systems, including special notices and material safety data sheets indicating impedances, hazards and safety measures to be implemented.
- .12 Delete information not applicable to project.
- .13 Supplement standard information to provide details applicable to project.
- .14 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- .15 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 notice of acceptance of offer.
  - .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.
- .16 Submit shops drawings for:
  - Concrete
  - Bolts and washer
  - Treated wood
  - Geotextile
  - Profiles and steel plates

#### **1.4 CERTIFICATES AND TRANSCRIPTS**

- .1 Immediately after award of Contract, submit Workers' Compensation Board status.

**Part 2            Products**

**2.1                NOT USED**

.1            Not Used.

**Part 3            Execution**

**3.1                NOT USED**

.1            Not Used.

**END OF SECTION**

**Part 1            General**

**1.1            SECTION INCLUDES**

- .1 Contractor shall manage his operations so that safety and security of the public and work site, personnel, including environmental protection, always take precedence over cost and scheduling considerations.

**1.2            RELATED SECTIONS**

- .1 Section 01 33 00 – Submittal Procedures.

**1.3            REFERENCES**

- .1 Canada Labour Code, Part II, Canada Occupational Safety and Health Regulations.
- .2 Canadian Standards Association (CSA).
- .3 Act Respecting Occupational Health and Safety, R.S.Q. Chapter S-2.1 (2010).
- .4 Construction Safety Code, S-2.1, r.6 2010.

**1.4            QUÉBEC ACT RESPECTING OCCUPATIONNAL HEALTS AND SAFETY AT WORK**

- .1 In accordance to the provisions of the Québec Act respecting Occupational Health and (R.S.Q., c. S-2.1) and only for the purposes on the said Act, the Contractor shall assume, from the beginning of the work, the role and obligations of principal contractor as defined in the said Act in addition to the obligations incumbent on him as an employer under the provisions of the said Act and also meet his obligations in respect to health and safety as stipulated in these contract documents.

**1.5            SUBMITTALS**

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to Departmental Representative, the CSST and the Association sectorielle paritaire en santé et en sécurité de la construction (ASP Construction) the site-specific safety program, as outlined in 1.10.2 at least 10 days prior to start of work. The Contractor must review his program during the course of the project if any change occurs in work methods or site conditions. The Departmental Representative may, after receiving the program or at any time during the project, ask the Contractor to update or modify the program in order to better reflect the reality of the construction site and activities. The Contractor must make the required changes before work begins.
- .3 Submit one per week to Departmental Representative the site inspection sheet, duly completed.
- .4 Submit the Departmental Representative within 24 hours a copy of any inspection report, correction notice or recommendation issued by federal or provincial inspectors.

- .5 Submit to Departmental Representative within 24 hours an investigation report for any accident involving injury and any incident exposing a potential hazard.
- .6 Submit to Departmental Representative all safety data sheets for hazardous material to be used at the site at least three (3) days before they are to be used.
- .7 Submit to Departmental Representative copies of all training certificates required for application or the safety program, in particular:
  - .1 General construction site safety and health courses;
  - .2 Safety officer attestations;
  - .3 First aid in the workplace and cardio-pulmonary resuscitation;
  - .4 Work likely to release asbestos dust;
  - .5 Work in confined spaces;
  - .6 Lockout procedures;
  - .7 Wearing and fitting of individual protective gear;
  - .8 Truck lift safe driving;
  - .9 Platforms elevating work;
  - .10 Any other requirement of Regulations or the safety program.
- .8 Emergency plan: The emergency plan, as defined in 1.10.3, shall be submitted to Departmental Representative at the same time as the site-specific safety program.
- .9 Notice of site opening: Notice of site opening shall be submitted to the Commission *de la santé et de la sécurité du travail* before work begins. A copy of such notice shall be submitted to Departmental Representative at the same time and another posted in full view at the site. During demobilization, a notice of site closing shall be submitted to the CSST, with copy to Departmental Representative.
- .10 Plans and certificates of compliance: Submit to the CSST and to the Departmental Representative a copy signed and sealed by Engineer of all plans and certificates of compliance required pursuant to the Construction Safety Code (S-2.1, r. 6), or by any other legislation or regulation or by any other clause in the specifications or in this contract. Copies of these documents must be on hand at the site at all times.
- .11 Certificate of compliance delivered by the CSST: The certificate of compliance is a document delivered by the CSST confirming that the Contractor is in rule with the CSST, i.e. that he had pay out all the benefits concerning this contract. This document must be delivered to Departmental Representative at the end of the work.

## **1.6 HAZARDS ASSESSMENT**

- .1 The Contractor must identify all hazards inherent in each task to be carried out at the site.
- .2 The Contractor must plan and organize work so as to eliminate hazards at source or promote mutual protection so that reliance on individual protective gear can be kept to a minimum. Where individual protection against falling is required, workers shall use safety harness that meets standard Can-CSA-Z-259.10-F06. Safety belts shall not be used as protection against fallings.

- .3 Equipment, tools and protective gear which cannot be installed, fitted or used without compromising the health or safety of workers or the public shall be deemed inadequate for the work to be executed.
- .4 All mechanical equipment shall be inspected before delivery to the site. Before using any mechanical equipment, submit to Departmental Representative a certificate of compliance signed by a qualified mechanic. Whenever he suspects a defect or accident risk, Departmental Representative may at any time order the immediate shut-down of equipment and require a new inspection by a specialist of his own choosing.

## **1.7 SAFETY MEETINGS**

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

## **1.8 LEGAL AND REGULATORY REQUIREMENTS**

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

## **1.9 SITE-SPECIFIC CONDITIONS**

- .1 At the site, the Contractor must take account of the following specific conditions:
  - .1 Works involving drowning risks.  
The following requirements shall be met for work involving drowning risks:
    - .1 Comply with section 2.10.13 of the Safety Code for the construction industry.
    - .2 (a) Wear a life jacket or buoyancy device that meets the standards set out in the Canadian General Standards Board Standard:
      - CAN/CGSB-65.7-M88, *Life Jackets, Inherently Buoyant Type*, dated April, 2007.
      - or, unusually be accepted by Transport Canada.
    - (b) or be protected by a safety net or a fall protection system.
  - .3 Obtain and forward to the Departmental Representative a letter of compliance issued by Transports Canada for the approval of any vessel (transportation, rescue, inspection, etc.) before work begins. (Reference: Mr Robert Fecteau, Transport Canada, 418 722-3040).
  - .4 Ensure that a rescue vessel moored and in the water is available for each workstation. However, where the vessel is accessible by land, it may serve

- more than on workstation provided the distance between any workstation and the vessel is less than 100m.
- .5 Ensure that the vessel is equipped with a motor powerful enough to overcome the current.
  - .6 Ensure that the vessel has the necessary features to accommodate persons likely to be part of a rescue operation.
  - .7 Ensure that the rescue vessel is available for workers at all times in case of an emergency.
  - .8 Ensure that a qualified person is available to use the emergency equipment. That person must have a pleasure craft operator card for the length of vessel being used.
  - .9 Establish written emergency procedures containing the following information and ensure that all workers subject to those procedures have the training and information needed to apply them:
    - A full description of the procedures, including the responsibilities of the people who have access to the work site.
    - The location of the emergency equipment.
  - .10 Where the work site is a pier, a basin, a jetty, a wharf or any similar structure, a ladder with at least two (2) rungs below the surface of the water shall be installed on the front of the structure every 60 meters. This measure shall apply even if the project is a construction project, in which case a temporary (or portable) ladder may be used and removed when the work is complete if the owner does not own the basic facilities. However, the owner must be notified in writing that the site does not comply with the Canada Labour Code, part II.
- .2 Risk of falling height.
  - .3 Land transport and transshipment of stones and concrete blocks.

#### **1.10 SAFETY AND HEALTH MANAGEMENT**

- .1 Acknowledge and assume all the tasks and obligations which customarily devolve upon a principal Contractor under the terms of the Occupational Health and Safety Act (R.S.Q., chapter S-2.1) and the Construction Safety Code (S-2.1, r.6).
- .2 Develop a site-specific safety program based on the hazards identified and apply it from the start project work until close-out is completed. The safety program must take account of all information and must be submitted to all parties concerned, in accordance with the provisions set forth in article 1.9 and must be submitted to all parties concerned as defined in 1.2. At a minimum, the site-specific safety program must include:
  - .1 Company safety and health policy.
  - .2 A description of the work, total costs, schedule and projected workforce curve.
  - .3 Flow chart of safety and health responsibility.
  - .4 The physical and material layout of the site.
  - .5 First-aid and first-line treatment standards.
  - .6 Identification of site-specific hazards.
  - .7 Risk assessment for the tasks to be carried out, including preventive measures and the procedures for applying them.

- .8 Training requirements.
- .9 Procedures in case of accident/injury.
- .10 Written commitment from all parties to comply with the prevention program.
- .11 A site inspection schedule based on the preventive measures.
- .3 The Contractor must draw up an effective emergency plan based on the characteristics and constraints of the site and its surroundings. Submit the emergency plan to all parties concerned as defined in 1.2. The emergency plan must includes:
  - .1 Evacuation procedure;
  - .2 Identification of resources (police, firefighters, ambulance services, etc.);
  - .3 Identification of persons in charge at the site;
  - .4 Identification of those with first-aid training;
  - .5 Training required for those responsible for applying the plan;
  - .6 Any other information needed, in light of the site characteristics.

#### **1.11 RESPONSIBILITIES**

- .1 No matter the size of the construction site or how many workers are present at the workplace, designate a competent person to supervise and take responsibility for health and safety. Take all necessary measures to ensure the health and safety of persons and property at or in the immediate vicinity of the site and 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 equipments of the specification, applicable federal and provincial regulations and standards as well as the site-specific safety program, complying without delay with any order or correction notice issued by the Commission de la santé et de la sécurité du travail.
- .3 Take all necessary measures to keep the site clean and in good order throughout the course of the work.

#### **1.12 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 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 Data sheets for all hazardous material used at the site;
  - .7 Minutes of site committee meetings;



- .8 Names of site committee representatives;
- .9 Names of those with first-aid training;
- .10 Action reports and correction notices issued by the CSST.

### **1.13 UNFORSEEN 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.

### **1.14 BLASTING**

- .1 Blasting and other use of explosives are forbidden.

### **1.15 POWDER HAMMERS AND OTHER EXPLOSIVE-ACTUATED DEVICES**

- .1 Use powder actuated devices only after receipt of written permission from Departmental Representative.
- .2 Any person using a power hammer shall hold a training certificate and meet all requirements of Section 7 of the Construction Safety Code (S-2.1, r.6).
- .3 Any other explosive-actuated device shall be used in accordance with the manufacturer's directions and applicable standards and regulations.

### **1.16 INSPECTION OF SITE AND CORRECTION OF HAZARDOUS SITUATIONS**

- .1 Inspect the work site and complete the site inspection sheet at least one time per week.
- .2 Immediately take all necessary measures to correct any lapses from legislative or regulatory requirements and any hazards identified by a government inspector, by the Departmental Representative, by the site safety and health coordinator or during routine inspections.
- .3 Submit to Departmental Representative written confirmation of all measures taken to correct lapses and hazardous situations.
- .4 Give the safety officer or, where there is no safety officer, the person assigned to safety and health responsibilities, full authority to order interruption and resuming of work as and when deemed necessary or desirable in the interests of safety and health. This person must act so that the safety and health of the public and site workers and environmental protection take precedence over cost and scheduling considerations.
- .5 Departmental Representative may order cessation of work if, in his/her view, there is any hazard or threat to the safety of health of site personnel or the public or the environment.

## **Part 2 Products**

### **2.1 NOT USED**

- .1 Not used.

**Part 3            Execution**

**3.1                NOT USED**

.1            Not used.

**END OF SECTION**

**Part 1            General**

**1.1               RELATED SECTIONS**

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

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

**1.3               SUBMITTALS**

- .1        Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2        Prior to commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review and approval by Departmental Representative. Environmental Protection Plan is to present comprehensive overview of known or potential environmental issues which must be addressed during construction.
- .3        The actions included in the plan of environmental protection must be presented according to a level of detail commensurate with environmental issue, with required construction tasks and they must conform to the requirements enumerated in the present section.
- .4        Environmental protection plan include:
  - .1        Names of persons responsible for ensuring adherence to Environmental Protection Plan.
  - .2        Spill Control Plan: including procedures, implied people and their formation, instructions, and reports to be used in event of unforeseen spill of regulated substance.
  - .3        Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.
  - .4        Air pollution control plan detailing provisions to assure that dust, debris, materials, and trash, do not become air borne and travel off project site.
  - .5        Contaminant prevention plan that: identifies potentially hazardous substances to be used on job site; identifies intended actions to prevent introduction of such materials into air, water, or ground; and details provisions for compliance with Federal,

Provincial, and Municipal laws and regulations for storage and handling of these materials.

- .6 A prevention plan to prevent erosion and sediment transport, indicating the measure to be implemented, including construction supervision and reporting to ensure compliance with the laws of action and federal, state and municipal;
- .7 drawings showing the location of temporary excavations or tracks construction landscaped embankment of river crossings, materials, construction, sanitation, deposits of surplus materials or contaminated materials, drawings illustrating the methods to be used to control runoff and to contain materials on site;
- .8 plans for traffic control, including measures to reduce erosion of temporary roadbeds by the movement of construction vehicles, particularly in wet weather, these plans must include measures to reduce the transport of sludge public roads by vehicles or runoff;
- .9 plan of the work area, showing the activities in every part of the work area and indicating areas restricted and prohibited areas to use, the plan must include measures for marking the limits of use areas and methods of protection from the elements located within the work area and allowed to be preserved.

#### **1.4 FIRES**

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

#### **1.5 DISPOSAL OF WASTES**

- .1 Do not bury rubbish and waste materials on site unless approved by Departmental Representative.
- .2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.

#### **1.6 WORK ADJACENT TO WATERWAYS**

- .1 It is forbidden to use construction equipment in waterways.
- .2 Do not extract borrowed material from the bed of the river and the riverbank.
- .3 Do not discharge cuttings, scrap materials and debris in streams.
- .4 It is forbidden to blow underwater.
- .5 Equipment maintenance and fuelling shall be done at a minimum distance of 30 metres from the bank.
- .6 If any equipment shall to stay within 30 metre of the bank, Contractor shall submit to Departmental Representative a protection plan for these operations.
- .7 Stocking of petroleum products and others hazardous materials shall be done at a minimum distance of 30 metres from the bank. If temporary oil installations are used, the water storage

areas should be managed in accordance with applicable regulations. Storage systems will be on sealed surfaces. An intervention package in case of oil spills must be present on site at all times.

- .8 Construction equipment must be used only from the shore.
- .9 Do not extract borrowed material from the bed of the stream.
- .10 Rivers must be free of debris, scrap materials and debris.
- .11 Design and construct culverts or other temporary crossings of streams to reduce erosion to a minimum.
- .12 Do not drag logs or construction materials from one side to the other streams.

## **1.7 MATERIAL TRANSPORTATION**

- .1 The transport of material to the worksite is allowed on public roads Monday to Saturday inclusively, unless otherwise instructed by the authority having jurisdiction. Material transport is prohibited on Sundays and legal holidays.
- .2 The transport of material through municipality may begin at 7:00 a.m. and end at 7:00 p.m., Monday to Friday and at 8:00 a.m. and end at 5:00 p.m. the Saturday. Transport outside these hours is prohibited.
- .3 Contractor shall use trucks in good running order. Any truck or any carrier mode with a noise output found above the normal level by Departmental Representative, shall terminate material hauling to be repaired or modified.
- .4 Contractor shall use an effective regulation sign and cooperate with municipality, Departmental Representative and other authorities having jurisdiction to minimize impact of transportation on the daily life of residents in the vicinity of trucks route and worksite.
- .5 Use protective covering for granular materials during transportation.
- .6 Regularly clean public roads using a sweeper.

## **1.8 AQUATIC ENVIRONMENT PROTECTION ALONG THE WORKSITE**

- .1 Do not stockpile stones or debris from demolition in aquatic environment and on the bank.
- .2 As work progresses, the Contractor shall clean aquatic environment completely to remove all debris from demolition.
- .3 Contractor shall minimize direct equipment operations in aquatic environment, on the beach, and on the bank. Heavy equipment shall at no time circulate in the aquatic environment located outside the limits of work.
- .4 In the event of in-water work should continue beyond the stipulated period, it will be important not to carry out the work between May 10 and July 9.
- .5 Use equipment that minimize sediment, suspension layout.

- .6 If the turbidity of the water inside the harbour became important, the contractor will reduce the rate of extortion, riprap or other work causing the turbidity.
- .7 The contractor shall clearly define the work area within which equipment and machinery shall remain at all times.
- .8 To the extent possible, focus on building work in water at low tide.
- .9 All granular materials used in this project must be clean and free from contamination.
- .10 Advocating the use of equipment using a biodegradable vegetable oil type HF.

## **1.9 CONCRETING WORK**

- .1 Carry out concreting to avoid the concrete and it contains particles reach the aquatic environment.
- .2 Do not discharge directly or indirectly into the aquatic waters that have been in contact with fresh or partially cured concrete or cement.

## **1.10 POLLUTION CONTROL**

- .1 Maintain temporary erosion and pollution control features installed under this specification.
- .2 Control emissions from equipment and plant to local authorities' emission requirements.
- .3 Granular materials likely to be put suspended in the air will have to be covered so that they cannot be transported by the wind during their stockpiling. Ensure that there is no leakage of fuel, oil or grease.
- .4 Avoid cleaning machinery near the water.
- .5 Do not let the engine idle unnecessarily machinery and trucks.
- .6 Build temporary shelters to prevent sanding materials and other extraneous material (paint) contaminate air and waterways beyond the area of application.
- .7 Granular material may be suspended in the air or water during rain will be covered so that they can't be transported by wind or water during pile storage.
- .8 Cover the waste to avoid the wind raises dust or debris causes. Remove dust on temporary roads.
- .9 In the case of an accidental spill of oil, gasoline or other environmental incident, report the incident immediately to the Departmental Representative and the following authorities:
  - .1 Environment Canada, Environmental Emergencies Centre. Tel. : 866-283-2333.
  - .2 Ministry of Sustainable Development, Environment, Wildlife and Parks (MDDEP). Tel. 1-866-694-5454
  - .3 Canadian Coast Guard, Marine Pollution. Tel.: 800-363-4735.
  - .4 Supervisor site.

- .10 The contractor shall make every effort to dry up the source of the spill within the limits recommended by security. Damming and / or carpet absorber oil should be deployed in order to contain the spill. Carpets or dams should be stored in a container identified the shore side and must be towed up to absorb and contain the spill. Carpets and dams will be loaded into sealed containers for treatment and / or appropriate disposal.
- .11 Contaminated by a spill soil should be placed in a pile on waterproof canvas and must be covered with waterproof canvas. An audit of the environmental quality of these materials must be carried out before they are sent to off-site, and in accordance with the regulations and guidelines MSDEP. They will then be sent to an authorized site.
- .12 Contaminated by spillage should be confined to be taken directly to or characterized by a specialized company and, in compliance with the regulations and guidelines MSDEP.
- .13 All relevant site staff should be fully trained in emergency spill, methods and use of equipment and relevant materials response procedures.

#### **1.11 NOTIFICATION**

- .1 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.
- .2 Contractor: after receipt of such notice, inform Departmental Representative of proposed corrective action and take such action for approval by Departmental Representative.
- .3 Departmental Representative will issue stop order of work until satisfactory corrective action has been taken.
- .4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

#### **1.12 ATTENUATION MEASURES**

- .1 Contractor shall considerate the following attenuation measures while performing work to reduce environmental impacts.
  - .1 The water will be pumped into the cofferdam will be released into the harbour basin provided they do not increase the suspended solids significantly (below the standard for suspended solids of the Canadian Council of Ministers environment (CCME) of 25 mg / kg compared to the natural environment).
  - .2 When weather conditions deteriorate (strong wind, storm, relatively large wave) the site supervisor may order the cessation of dredging along the piers to avoid significantly increase the suspended solids in the water.

#### **1.13 RESTRICTION PERIOD**

- .1 Work performed in low water level can not begin before September 30, 2013 with the exception of landfill outside the north and south piers work.

**Part 2            Products**

**2.1                NOT USED**

- .1        Not Used.

**Part 3            Execution**

**3.1                CLEANING**

- .1        Make a cleanup in accordance with section 01 74 11 – cleaning.
- .2        Waste Management separate waste materials for use / reuse and recycling in accordance with Section 01 74 21 – Management and disposal of construction / demolition.

**3.2                STRUCTURES CONSOLIDATION**

- .1        Imported to the site and set up structures to consolidate materials must be cleaned upon arrival at the site.
- .2        The work area should be well delimited in the harbor to avoid possible boating accidents.
- .3        A notice to navigation will be issued to inform the period of works and the area.

**END OF SECTION**



**Part 1            General**

**1.1                RELATED REQUIREMENTS**

- .1            Not applicable.

**1.2                REFERENCES AND CODES**

- .1            Perform Work in accordance with standards, codes and rules (updated version) following:
  - a)    CAN/CSA-S6 Canadian Highway Bridge Design Code.
  - b)    Federal and provincial environmental rules.
  - c)    Manual for construction and repair of structures of the Ministry of Transport of Quebec, updated version.
  - d)    Manual of Standards of the Ministry of Transport of Quebec.
  - e)    AASHTO Standard Specifications for Highway Bridges and Interim Specifications (American Association of State Highway and Transportation Officials).
  - f)    Canadian provincial standards on health and safety at work.
  - g)    The Canada Labour Code (including the latest revisions of all regulations).
- .2            Meet or exceed requirements of:
  - .1            Specification.
  - .2            Specified standards, codes and referenced documents.

**1.3                HAZARDOUS MATERIAL DISCOVERY**

- .1            Not used.

**1.4                BUILDING SMOKING ENVIRONMENT**

- .1            Not used.

**1.5                NATIONAL PARKS ACT**

- .1            Perform Work in accordance with National Parks Act when projects are located within boundaries of National Park.

**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               SCOPE**

- .1       This section defines the Contractor's responsibilities for Quality Control (QC) from the stone production to the Cap-des-Rosiers work delivery.
- .2       Specific requirements for Quality Control of quarried stone materials are addressed by the Stone Materials Control (SMC) Plan, as described in Section 35 31 24 – Stone Production.
- .3       Specific requirements for Quality Control for stone placement, including verification surveys required to establish payment quantities, are described in Section 35 31 25 – Stone Placement.
- .4       Independent Quality Assurance (QA) activities shall be performed by Departmental representative. These QA activities are intended to provide independent observations of conformance to the requirements of the Plans and Specifications, and in no way relieve the Contractor of his responsibilities for Quality Control.

**1.2               RELATED SECTIONS**

- .1       Section 35 31 24 – Stone Production.
- .2       Section 35 31 25 – Stone Placement.

**1.3               QUALITY CONTROL**

- .1       The Contractor shall:
  - .1       Be responsible for Quality Control (QC) and shall establish and maintain an effective Quality Control program. The Quality Control program shall include the personnel, procedures and organization necessary to produce an end product that complies with the Contract requirements. The program shall cover all construction operations, both on-site and off-site, and shall be keyed to the proposed construction sequence.
  - .2       Monitor Quality Control over suppliers, manufacturers, products, services, site conditions and workmanship, to produce work of specified quality.
  - .3       Comply with manufacturers' instructions, including each step in construction sequence.
  - .4       Should manufacturers' instructions conflict with specification, request clarification from Departmental Representative before proceeding.
  - .5       Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
  - .6       Perform work with persons qualified to produce workmanship of specified quality.

**1.4               TOLERANCES**

- .1       Monitor tolerance control to produce acceptable work. Do not permit tolerances to accumulate.

- .2 Comply with manufacturers' and specified tolerances. Should manufacturers' tolerances conflict with specification, request clarification from Departmental Representative before proceeding.

## **1.5 REFERENCES**

- .1 For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- .2 Conform to reference standard by date of issue current on date for receiving Tenders, except where a specific date is established by code.
- .3 Obtain copies of standards where required by product specification sections.

## **1.6 MEASUREMENT AND PAYMENT**

- .1 No measurement will be made under this section. All costs associated with developing and maintaining an effective Quality Control program shall be included in the bid prices contained in the tender form.

## **1.7 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 specification. If, upon examination such work is found not in accordance with specification, correct such Work and pay cost of examination and correction. If such Work is found in accordance with specification, Departmental Representative shall pay cost of examination and replacement.

## **Part 2 Products**

### **2.1 NOT USED**

- .1 Not Used.

**Part 3            Execution**

**3.1                QUALITY CONTROL PLAN**

- .1        The Contractor shall furnish for review by the Departmental Representative, not later than fifteen days after receipt of Notice of acceptance of offer, the Contractor's proposed Quality Control Plan. The plan shall identify personnel, procedures, control, instructions, tests, records, and forms to be used. The Departmental Representative will consider an interim plan for the first fifteen days of operation. Construction will be permitted to begin only after acceptance of the Contractor's Quality Control Plan or acceptance of an interim plan applicable to the particular feature of work to be started. Work outside of the features of work included in an accepted interim plan will not be permitted to begin until acceptance of the Contractor's Quality Control Plan or another interim plan containing the additional features of work to be started.
- .2        The Quality Control Plan shall include, as a minimum, the following to cover all construction operations, both on-site and off-site, including work by sub-contractors, fabricators, suppliers, and purchasing agents:
  - .1        A description of the Quality Control organizations, including a chart showing lines of authority and acknowledgment that the Contractor's Quality Control staff understands that they shall implement the three-phase control system for all aspects of the work specified. The staff shall include a Contractor's Quality Control System Manager who shall report to the Project Manager or someone higher in the Contractor's organization. Project Manager in this context shall mean the individual with responsibility for the overall management of the project, including quality and production.
  - .2        The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a Quality Control function.
  - .3        A copy of the letter to the Contractor's Quality Control System Manager signed by an authorized official of the firm which describes the responsibilities and delegates sufficient authorities to adequately perform the functions of the Contractor's Quality Control System Manager, including authority to stop work which is not in compliance with the Contract. The Contractor's Quality Control System Manager shall issue letters of direction to all other various quality control representatives outlining duties, authorities and responsibilities.
  - .4        Procedures for tracking construction deficiencies from identification through acceptable corrective action. These procedures will establish verification that identified deficiencies have been corrected.
  - .5        Acceptance of the Contractor's Quality Control Plan by the Departmental Representative is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction.
  - .6        After acceptance of the Quality Control Plan, the Contractor shall notify the Departmental Representative in writing a minimum of seven calendar days prior to any proposed change. Proposed changes are subject to acceptance by the Departmental Representative

**3.2                QUALITY CONTROL PHASES**

- .1        Quality Control is the means by which the Contractor ensures that the construction, to include that of sub-contractors and suppliers, complies with the requirements of the Contract. The controls shall be adequate to cover all construction operations, including both on-site and off-

site activities, and will be keyed to the proposed construction sequence. The controls shall include at least three phases of control to be conducted by the Contractor's Quality Control System Manager for all definable features of work, as follows:

- .1 Preparatory Phase: This phase shall be performed prior to beginning work on each definable feature of work and shall include:
  - a) A review of each paragraph of applicable Specifications.
  - b) A review of the Contract Plans.
  - c) A check to assure that all materials and/or equipment have been tested, submitted, and approved.
  - d) A check to assure that provisions have been made to provide required control inspection and testing.
  - e) Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the specification.
  - f) A physical examination of required materials, equipment, and sample work to assure that they are on hand, conform to approved shop drawing or submittal date, and are properly stored.
  - g) Discussion of procedures for constructing the work, including amendments necessary to resolve repetitive deficiencies. Document construction tolerances and workmanship standards for that phase of work.
  - h) A check to ensure that the Departmental Representative has accepted the portion of the Quality Control Plan for the work to be performed.
- .2 Initial Phase: This phase shall be accomplished at the beginning of a definable feature of work. The following shall be accomplished:
  - a) A check of completed work to ensure that it is in compliance with specification requirements.
  - b) Verification of full specification compliance. Verify required Quality Control inspection and testing.
  - c) Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Compare with accepted test sections and sample panels if appropriate.
  - d) Resolve all differences.
  - e) The initial phase should be repeated for each new crew to work on-site, or any time acceptable specified quality standards are not being met.
- .3 Follow-up Phase: Daily checks shall be performed to assure continuing compliance with specification requirements, including control testing, until completion of the particular feature of work. The checks shall be made a matter of record in the Contractor's Quality Control documentation and submitted to the Departmental Representative. Final follow-up checks shall be conducted and all deficiencies corrected prior to the start of additional features of work that may be affected by the deficient work. The Contractor shall not build upon or conceal non-conforming work.

### **3.3 STONE MATERIALS CONTROL PLAN**

- .1 The Contractor is responsible for, and shall establish and maintain, a Stone Materials Control (SMC) plan to assure all stone materials incorporated in the Work are in compliance with the specifications. Section 35 31 24 – Stone Production defines specific requirements for the SMC plan that shall be implemented by the Contractor for this project.

### **3.4 SURVEY CONTROL, PROJECT LAYOUT AND STONE PLACEMENT SURVEYS**

- .1 The Contractor is responsible for, and shall establish and maintain all survey control as required to perform the work required by the specification. Project control monuments are depicted on the Drawings.
- .2 The Contractor is responsible for project layout, including establishing and maintaining the Survey Control Line (SCL), and is also responsible for construction surveys as required to perform the work required by the specification.
- .3 The Contractor is responsible for, and shall undertake, verification surveys for all work performed at the site to assure compliance with the specifications. Verification surveys will be used to establish quantities for payment, and shall be conducted in the presence of the Departmental Representative unless waived by the Departmental Representative.
- .4 Section 35 31 25 – Stone Placement defines specific survey requirements to be implemented by the Contractor for this project, including survey control, project layout, construction surveys and verification surveys.

### **3.5 COMPLETION INSPECTION**

- .1 At the completion of all work, the Contractor's Quality Control System Manager and Departmental Representative shall conduct an inspection of the Work and develop a "punch list" of items that do not conform to the Plans and Specifications. The Contractor shall provide an estimated date by which the Contractor's Quality Control System Manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected and so notify the Departmental Representative.

### **3.6 DOCUMENTATION**

- .1 The Contractor shall maintain current records of Quality Control operations, activities, and tests performed, including the work of sub-contractors and suppliers. These records shall be on an acceptable form and shall include factual evidence that required Quality Control activities and/or tests have been performed, including but not limited to the following:
  - .1 Contractor/sub-contractor and their area of responsibility.
  - .2 Test and/or control activities performed with results and references to requirements of Plans and/or Specifications.
  - .3 Identify submittals reviewed, with Contract reference.
  - .4 Conflicts in Plans and/or Specifications.
  - .5 As-built Contract Drawings consisting of a complete set of Contract Drawings marked in red to depict all conditions differing from the original Plans.

.6 Shop drawings as finally approved.

**END OF SECTION**



**Part 1            General**

**1.1                RELATED SECTIONS**

- .1        Section 01 52 00 – Construction Facilities.
- .2        Section 01 56 00 – Temporary Barriers and Enclosures.
- .3        Section 01 74 21 – Construction/Demolition Waste Management.

**1.2                INSTALLATION AND REMOVAL**

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

**1.3                WATER SUPPLY**

- .1        Departmental Representative will not provide continuous supply of potable water for construction use.

**1.4                TEMPORARY POWER AND LIGHT**

- .1        Departmental Representative does not provide the temporary power supply for lighting and operation of power tools during construction. The Contractor shall make its own arrangements, either install an electric meter specific to their needs or make an agreement with the Parks Canada Agency.
- .2        Provide temporary lighting places throughout the duration of the work and ensure network maintenance.
- .3        Provide temporary lighting of the premises for the duration of the work and ensure network maintenance.
- .4        Electrical power and lighting systems installed under this Contract may be used for construction requirements only with prior approval of Departmental Representative provided that guarantees are not affected. Make good damage to electrical system caused by use under this Contract.

**1.5                TELECOMMUNICATIONS**

- .1        The Contractor shall provide temporary telecommunications facilities, including telephone, fax and Internet services, including lines for its own use and for use by the Departmental Representative and must ensure the connection of these facilities for major networks and bear the costs of these services.

**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 SECTIONS**

- .1        Section 01 51 00 – Temporary Utilities.
- .2        Section 01 56 00 – Access and temporary protection works.
- .3        Section 01 74 21 – Management and Disposal construction waste / demolition.

**1.2               INSTALLATION AND REMOVAL OF EQUIPMENT**

- .1        Prepare a plan showing the proposed location and dimensions of the area to be fenced and used by the Contractor, the number of required construction trailers, routes, of access to the fenced area and details of installation of the fence.
- .2        Indicate areas to be covered with gravel to prevent sludge deposits.
- .3        Provide any additional area or staging area.
- .4        Provide, implement or develop the site facilities necessary for the performance of work in the shortest possible time.
- .5        Remove the equipment and remove the site when no longer needed.

**1.3               HOISTING**

- .1        Hoisting : according to the standard or norm CAN/CSA-S269.2.

**1.4               LIFTING EQUIPMENT**

- .1        Supply and install and cranes needed to move, materials / materials and equipment, and maintain and labor.
- .2        Labor and cranes must be entrusted to skilled workers.
- .3        Use lifting devices provided by the Departmental Representative for handling panels articulated concrete blocks.

**1.5               SITE STORAGE/LOADING**

- .1        Confine work and operations of employees by the specification. 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.

**1.6               CONSTRUCTION PARKING**

- .1        Will be allowed to park on site, provided it does not interfere with the execution of the work.

- .2 Parking for the fishermen will be made available to the contractor during the construction period from September to December 2013.
- .3 Develop suitable access roads to the site and maintain.

## **1.7 OFFICES**

- .1 Provide office heated to 22°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 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°C inside temperature at -20°C outside temperature.
  - .4 Finish inside walls and ceiling with plywood, hardboard or wallboard and paint.
  - .5 Install electrical lighting system to provide min 750 lx using surface mounted, shielded commercial fixtures with 10% upward light component.
  - .6 Provide washroom facilities adjacent to office complete with flush or chemical type toilet, and maintain supply of paper towels and toilet tissue.
  - .7 Equip office with 1 x 2 m table, 3 chairs, which one is swivelling, one 3 drawer filing cabinet, one plan rack and one coat rack and shelf.
  - .8 Maintain in clean condition.
- .4 Construction trailers contractor may be installed near the fishermen's hangar.

## **1.8 EQUIPMENT, TOOL AND MATERIALS STORAGE**

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

## **1.9 SANITARY FACILITIES**

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

## **1.10 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 of traffic, including 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 Construct access and haul roads necessary.
- .8 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.
- .9 Provide any necessary means to eliminated aerial dust and clean dust and debris on the road.
- .10 Lighting : to assure full and clear visibility for full width of haul road and work areas during night work operations.
- .11 Provide for the removal of snow during the construction period.
- .12 Remove, upon completion of work, haul roads designated by Departmental Representative.

#### **1.11 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.

CAP-DES-ROSIERS  
Harbour refection  
Project: R.044042.001

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CONSTRUCTION FACILITIES  
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**Part 3            Execution**

**3.1                NOT USED**

.1            Not Used.

**END OF SECTION**

**Part 1            General**

**1.1                REFERENCES**

- .1        Section 01 51 00 – Temporary Utilities Services
- .2        Section 01 52 00 – Construction Facilities
- .3        Section 01 74 21 – Management and Disposal construction waste / demolition

**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                PALISADES**

- .1        Erect a palisade temporary in order to close access to the site in compliance with the Safety Code for the construction work.

**1.4                GUARD RAILS AND BARRICADES**

- .1        Provide secure, rigid guard rails and barricades around deep excavations and all such works.
- .2        Provide as required by governing authorities.

**1.5                SHELTER AGAINST, NAVEL AND WEATHER CLOSURES**

- .1        Provide railings and rigid and security barriers and settle around deep excavations.
- .2        Supply and install these items as indicated.

**1.6                ACCESS TO SITE**

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

**1.7                TRAFIC**

- .1        Hire competent signal flag operator and foresee any necessary traffic lights, fences, flares, and lights useful to complete the work while ensuring public security. This requirement applies during periods of recovery of the stone located in the area of Route 132 (Montée Laurencelle).

**1.8                ACCESS TO THE SITE**

- .1        The path designated by the Contractor for the execution of work is shown on the plan. The Contractor shall use the path from the road 132 that goes to the coast road. There is an existing barrier to entry where the Contractor shall monitor and keep it closed and locked when there is no road and outside working hours. The Contractor shall install signs of dimension 1200 x 2440 mm indicating "No Trespassing, construction.

- .2 The Contractor shall take the bridge Whalen special charges such as the mobilization of heavy equipment on flatbed truck. Thus, it will use the path of Cap Bon Ami in these cases alone.

## **1.9 ACCESS ROAD FOR EMERGENCY VEHICLES**

- .1 Provide access to the site for emergency vehicles and provide in this regard clearances sufficient height.

## **1.10 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.
- .3 Assume full responsibility for damage to the work due to a lack of protection or inadequate protection.

## **1.11 PROTECTION OF WORK FINISHES**

- .1 Provide protection for finished and partially finished element finishes and equipment during performance of Work.
- .2 Assume full responsibility for damage to articles due to a lack of protection or inadequate protection.

## **1.12 WASTE MANAGEMENT AND DISPOSAL**

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

## **Part 2 Products**

### **2.1 NOT USED**

- .1 Not Used.

## **Part 3 Execution**

### **3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**



**Part 1            General**

**1.1                CONNEXT SECTIONS**

- .1        Section 01 11 01 – Work related general information

**1.2                REFERENCES**

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

**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 notice of acceptance of offer, 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 sheet materials, lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.
- .5 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.
- .6 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.

## **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 he 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.

## **1.8 WORK QUALITY**

- .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 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.

**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       Submittals: in accordance with Section 01 33 00 - Submittal Procedures.

**1.3               MATERIALS**

- .1       Change in Materials: Submit request for substitution in accordance with Section 01 33 00 - Submittal Procedures.

**1.4               PREPARATION**

- .1       Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
- .2       After uncovering, inspect conditions affecting performance of Work.
- .3       Beginning of cutting or patching means acceptance of existing conditions.
- .4       Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.
- .5       Provide protection from elements for areas which are to be exposed by uncovering work; maintain excavations free of water.

**1.5               EXECUTION**

- .1       Execute cutting, fitting, and patching including excavation and fill, to complete Work.
- .2       Fit several parts together, to integrate with other Work.
- .3       Uncover Work to install ill-timed Work.
- .4       Remove and replace defective and non-conforming Work.
- .5       Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
- .6       Restore work with new products in accordance with requirements.
- .7       Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.

**1.6               WASTE MANAGEMENT AND DISPOSAL**

- .1       Separate waste materials for reuse and recycling.

**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                CONNEXT SECTIONS**

- .1    Section 01 74 21 – Construction/demolition waste management

**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 or evacuate the snow off the site. Clear snow and ice from access to harbour, bank/pile snow in designated areas only.
- .4    Obtain valid certificate for disposition of construction waste and debris.
- .5    Provide on-site containers for collection of waste materials and debris.
- .6    Use separated and identified containers for recycling refer section 01 74 21 - Construction/demolition waste management
- .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.

**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 those caused by Owner or other Contractors.
- .5    Clean and rehabilitate stone storage sites and material sites furnished by Departmental Representative
- .6    Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
- .7    Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .8    Sweep and clean the sidewalks, steps or any other surfaces; clean the remaining of the site work.

- .9 Remove dirt or any other debris who mess up with the site work.
- .10 Remove snow and ice from access to the site.

**1.4 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate waste materials for recycling and reuse in accordance with section 01 74 21 - Construction/demolition waste management

**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                WASTE MANAGEMENT GOALS**

- .1        Prior to start of Work conduct meeting with Departmental Representative to review and discuss PWGSC's Waste Management Plan and Goals.
- .2        Accomplish maximum control of solid construction waste.
- .3        Preserve environment and prevent pollution and environment damage.

**1.2                RELATED SECTIONS**

- .1        Section 01 35 43 – Environmental Procedures.
- .2        Section 01 56 00 – Temporary Barriers and Enclosures.
- .3        Section 01 74 11 – Cleaning.

**1.3                DEFINITIONS**

- .1        Class III: non-hazardous waste - construction renovation and demolition waste.
- .2        Inert Fill: inert waste - exclusively asphalt and concrete.
- .3        Cost/Revenue Analysis Workplan (CRAW): based on information from waste reduction workplan (WRW), and intended as financial tracking tool for determining economic status of waste management practices.
- .4        Recyclable: ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse.
- .5        Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.
- .6        Recycling: process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- .7        Reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes:
  - .1        Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.
  - .2        Returning reusable items including pallets or unused products to vendors.
- .8        Recovery: Removal of components and materials for load-bearing during decommissioning operations or dismantle commercial industrial or institutional structures, in order to reuse / reuse or recycling.



- .9 Separate Condition: refers to waste sorted into individual types.
- .10 Source separation: separation of different types of products and waste materials from the moment they become waste.

#### **1.4 WASTE REDUCTION WORKPLAN (WRW)**

- .1 Prepare WRW prior to project start-up.
- .2 WRW should include but not limited to:
  - .1 Destination of materials listed.
  - .2 Deconstruction/disassembly techniques and sequencing.
  - .3 Schedule for deconstruction/disassembly.
  - .4 Location.
  - .5 Security.
  - .6 Protection.
  - .7 Clear labelling of storage areas.
  - .8 Details on materials handling and removal procedures.
  - .9 Quantities for materials to be salvaged for reuse or recycled and materials sent to landfill.

#### **1.5 STORAGE, HANDLING AND PROTECTION**

- .1 Store, materials to be reused, recycled and salvaged in locations as directed by Departmental Representative.
- .2 Unless specified otherwise, materials for removal become Contractor's property.
- .3 Protect, stockpile, store and catalogue salvaged items.
- .4 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.
  - .1 Prior to obtain Departmental Representative's authorization to clear dry materials from worksite, Contractor shall submit to Departmental Representative a copy of authorizations and permits obtained from owner or manager of dry materials dumping site.
- .5 Protect structural components not removed for demolition from movement or damage.
- .6 Support affected structures. If safety of building is endangered, cease operations and immediately notify Departmental Representative.
- .7 Protect surface drainage, mechanical and electrical from damage and blockage.
- .8 Separate and store materials produced during dismantling of structures in designated areas.
- .9 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated facilities.
  - .1 On-site source separation is recommended.

- .2 Remove co-mingled materials to off-site processing facility for separation.
- .3 Provide waybills for separated materials.

## **1.6 DISPOSAL OF WASTES**

- .1 Do not bury rubbish or waste materials.
- .2 Do not dispose of waste into waterways, storm, or sanitary sewers.
- .3 Remove materials from deconstruction as deconstruction/disassembly Work progresses.
- .4 Contractor shall demonstrate his knowledge of the environmental quality of the choosen disposal site. If Contractor want dispose of waste materials in a non-evaluated site (legal non-certified) of his own choice, he shall proceed, at his own expense, with soil characterization of this site and obtain Departmental Representative's approval before to use it.

## **1.7 USE OF SITE AND FACILITIES**

- .1 Execute work with least possible interference or disturbance to normal use of premises.
- .2 Maintain security measures established by existing facility. Provide temporary security measures approved by Departmental Representative.

## **1.8 SCHEDULING**

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

## **Part 2 Products**

### **2.1 NOT USED**

- .1 Not Used.

## **Part 3 Execution**

### **3.1 APPLICATION**

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

### **3.2 CLEANING**

- .1 Remove tools and waste materials on completion of Work, and leave work area in clean and orderly condition.
- .2 Clean-up work area as work progresses.

**3.3 CANADIAN AND PROVINCIAL GOVERNMENTAL DEPARTMENTS CHIEF RESPONSIBILITY FOR THE ENVIRONMENT**

.1 Schedule E - Government Chief Responsibility for the Environment:

| Province | Address  | General Inquires             | Fax          |
|----------|--|------------------------------|--------------|
| Québec   | Ministère de l'Environnement et de la Faune, Siège social 150, boul, René-Lévesque Est Québec QC G1R 4Y1 | 418-643-3127<br>800-561-1616 | 418-646-5974 |
|          | Conseil de la conservation et de l'environnement 800, place d'Youville, 19e étage Québec QC G1R 3P4      | 418-643-3818                 |              |

**END OF SECTION**

**Part 1            General**

**1.1               RELATED SECTIONS**

- .1        Section 01 11 01 - Work Related General Information.
- .2        Section 01 35 43 – Environmental Procedures.
- .3        Section 01 74 21 – Construction/Demolition Waste Management
- .4        Section 02 41 16 – Structure Demolition.

**Part 2            Products**

**2.1               NOT USED**

- .1        Not Used.

**Part 3            Execution**

**3.1               REMOVAL OF SOLID WASTE AND DRY MATERIALS**

- .1        Do not bury or burn solid waste and dry materials on site.
- .2        The contractor shall engage, at his own expenses, an environmental consulting expert, to elaborate and to implement a management program for cleaning waste, demolition and excavation. The program is subject to the acceptance of the provincial environmental authorities (MDDEP).
- .3        Do not dispose of solid waste and dry materials in waterways, unless authorized in writing by the Departmental Representative.
- .4        Dry materials from demolition that are not to be reused shall be disposed off the site.
- .5        Dry materials from demolition, according to the Regulation Respecting Solid Waste RSQ 1981, c. Q-2, r. 14 of the Environment Quality Act are defined in the Regulation (section 1 (n)) as: “non-fermentable, shredded residues free of hazardous waste, cut wood, debris and rubble; fragments of concrete, masonry and asphalt”.
- .6        Dry materials from demolition that are not reusable shall be disposed of at sites authorized by the Ministry of Sustainable Development, Environment and Parks of Quebec (MSDEP). On request, the MSDEP can provide information on the sites in operation.
- .7        The Contractor shall submit to the Departmental Representative a copy of the authorizations and permits from the owners or managers of dry material disposal sites before the latter authorizes the Contractor to remove dry materials from the work site.
- .8        The Contractor shall demonstrate that he knows the environmental quality of the depot site chosen. If the Contractor want to depose materials on a none evaluate (or not certified

regulated) site he has to proceed, at his own cost, of the soil characterisation and obtain the authorisation of Departmental Representative before using it.

If the Contractor wants to dispose dry materials in a site other than L.E.T. authorized by MDDEP, he has to obtain the authorisation from MDDEP unless he wants to use dry materials (soils examples, crushed concrete residues) for filling; he has to produce site authorisations from the municipality and in some case from MDDEP. The Contractor shall produce authorisations to respect the provincials/municipals regulations.

Note: The soils characterisation consist to sampling and analyse soils samples to determine the value of mineral (lead, brass, copper, zinc, cadmium, chrome, arsenic, nickel and mercury), of hydrocarbon of petroleum and of polycyclic aromatic hydrocarbons (PAH's). (Ref.: Guide for Site Characterization of MDDEP and the Policy of protection of soils and rehabilitation of contaminate land (MDDEP).

- .9 The soil and sediment quality near the intended site of the work was evaluated in 2011 by the firm LVM and Exova laboratory. The results of chemical analyzes of samples soil showed no contamination with the exception of a few samples, all located in the northwest sector of the sheet pile wall. However, the concentrations are all in the range AB according to the criteria of the policy of protection of soil and brown field Ministry of Sustainable Development, Environment and Parks (MSDEP). For sediments, a contamination in the range AB and BC for PAH was observed in the center of the basin. However, the access channel has no contamination. The edge of the bridge Whalen and outside piers no characterization has been conducted in these areas. One new characterization will be conducted in July to determine the volume of contaminated soil in the range AB and check the quality of sediments near the bridge and Whalen outside discarded.
- .10 The environmental expert appointed by the Contractor shall consider this information in preparing his management plan for disposal of materials.
- .11 A laboratory authorized by the Contractor and approved by the Departmental Representative take samples in the soil piles deposited and will notify the Departmental Representative and Contractor of results.
- .12 Soils will be managed under their contamination degree, according to the Grid management of contaminated soil excavated Interim MDDEP:
  - .1 Contaminated soil, smaller than "A";
  - .2 Contaminated soil, class "A-B";
- .13 According to the results of parameters analyzed, all soils will be loaded and transported out of the depot site by the Contractor to authorized sites by MDDEP.
- .14 Contractor shall provide to Departmental Representative sites certificates demonstrating that these sites are authorized by the MDDEP. The excavation of "AB" classified soils shall not start until the Departmental Representative have in his possession all documents showing MDDEP's authorizations.
- .15 Contractor shall provide to Departmental Representative a copy of results analysis, weigh tickets where necessary, permits and licenses obtained by relevant authorities.

### **3.2 INCORPORATING DEMOLITION MATERIAL INTO SITE WORK**

- .1 Quarry run stone behind the pile wall shall be incorporated in work like showing on drawings.

### **3.3 REUSABLE MATERIALS**

- .1 Materials from demolition that are reusable are wood in good condition, rock, excavation materials, steel, etc.
- .2 Only the Contractor shall determine which materials are reusable, it is his responsibility.
- .3 Sort at source reusable materials from the structure demolition and store them on the site are not subject to federal or provincial regulations effective.
- .4 Dry materials from demolition that are reusable may be removed from the site as long as the Contractor:

- .1 submits a written promise that the site user and owner, if the user is not the owner, where the materials deemed reusable by the Contractor will be stored shall indemnify and save Her Majesty harmless from and against all claims, demands, losses, costs, damages, actions, suits or proceeding by whomever made, brought or prosecuted and in any manner based upon, arising out of, related to, occasioned by or attributable to the storage of these materials at the site by the Contractor, his employees, agents or sub-contractors, or the subsequent use of these materials;
- .2 submits a document duly signed by the site user and owner, if the user is not the owner, authorizing the Contractor to store demolition material deemed reusable by the Contractor at the site;
- .3 submits a document duly signed by the site user and owner, if the user is not the owner, indemnifying and saving Canada harmless from any claims resulting from storage at the site and subsequent use of demolition materials deemed reusable by the Contractor.

This document shall:

- .1 be completed in duplicate if the site user is not the owner (i.e. one copy for the site user and one copy for the site owner);
- .2 indicate the cadastre number of the lots of the storage site for material deemed reusable and the name of the owner of these lots;
- .3 contain the following paragraph:  
“\_\_\_\_\_ (enter the name of the company using the site or the site owner) shall indemnify and save Canada harmless from and against all claims, demands, losses, costs, damages, actions, suits or proceedings by whomever made, brought or prosecuted and in any matter base upon, arising out of, related to, occasioned by or attributable to the storage by \_\_\_\_\_ (enter the Contractor’s name), his employees, agents or sub-contractors, on the lot(s) bearing the number(s) \_\_\_\_\_ in the cadastre of \_\_\_\_\_, of demolition materials from \_\_\_\_\_, (enter the structure to be demolished) deemed reusable by the \_\_\_\_\_ (enter the Contractor’s name), or to the subsequent use of these materials”;
- .4 provides a document duly issued by the RCM or the municipality where the site is located authorizing the site user and owner, if the user is not the

- owner, to use the site to store reusable material from the demolition site;  
and
- .5 obtain written approval from the Departmental Representative in advance.

**END OF SECTION**

**Part 1            General**

**1.1               RELATED SECTION**

- .1       Section 01 74 11 – Cleaning.

**1.2               INSPECTION AND STATEMENT OF SUBSTANTIAL ACHIEVEMENT**

- .1       Contractor's inspection: Contractor and sub-contractors shall proceed to inspection of work, identify defects and deficiencies and repairs as necessary to conform to Contract documents.
  - .1       Notify Departmental Representative in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.
  - .2       Request Departmental Representative Inspection.
- .2       Departmental Representative Inspection: Departmental Representative will perform inspection of Work with Contractor in attendance to identify obvious defects or deficiencies. Contractor shall correct Work as required.
- .3       Work completion: submit written statement certifying that following have been performed:
  - .1       Work has been completed, inspected and deemed in compliance with Contract Documents.
  - .2       Defects and deficiencies identified during inspection have been corrected.
  - .3       Work is complete and ready for final inspection.
- .4       Final Inspection: when above steps are completed, file request for final inspection of Work by Departmental Representative and Contractor jointly. Where Work is deemed incomplete by Departmental Representative, complete outstanding items/features and file request for reinspection.

**1.3               CLEANING**

- .1       Perform cleanup in accordance with Section 01 74 11 – Cleaning.
  - .1       Remove from site materials/surplus materials, rubbish, tools and equip.
  - .2       Waste Management: separate waste materials for reuse/reuse and their recycling in accordance with Section 01 74 21 – Construction/Demolition 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**

**Part 1            General**

**1.1               RELATED SECTIONS**

- .1        Section 01 35 43 - Environmental Procedures.

**1.2               REFERENCES**

- .1        Association canadienne de normalisation (CSA/CSA) International
  - .1        CSA S350-M1980(R2003), Code of Practice for Safety in Demolition of Structures.

**1.3               DOCUMENTS / SAMPLES / SUBMITTALS FOR APPROVAL / INFORMATION**

- .1        Submit documents and samples in accordance with Section 01 33 00 Documents / Samples to be submitted.
- .2        Prior to beginning of Work on site submit detailed Waste Reduction Workplan in accordance with Section 01 74 21 – Management and disposal of construction / demolition. This plan should include the following:
  - .1        Descriptions of and anticipated quantities in percentages of materials to be salvaged reused, recycled and landfilled.
  - .2        The plan of selective demolition.
  - .3        The number and location of collection bowls.
  - .4        The frequency of scheduled collection.
  - .5        Name and address of haulers, waste facilities and waste receiving organizations.
- .3        Submit copies of certified weigh bills, bills of lading and receipts from authorized disposal sites and reuse and recycling facilities for material removed from site upon request of Departmental Representative.
  - .1        Written authorization from Departmental Representative is required to deviate from haulers, facilities and receiving organizations listed in Waste Reduction Workplan.

**1.4               QUALITY ASSURANCE**

- .1        Regulatory Requirements: Ensure Work is performed in compliance with applicable Provincial/Territorial and Municipal regulations.
- .2        Meetings:
  - .1        Prior to start of Work arrange for site visit with Departmental Representative to examine existing site conditions adjacent to demolition work.

**1.5               DELIVERY, STORAGE AND HANDLING**

- .1        Waste Management and Disposal
  - .1        Separate waste materials for reuse / reuse and recycling in accordance with Section 01 74 21 - Management and disposal of construction / demolition.

## **1.6 WASTE MANAGEMENT AND DISPOSAL**

- .1 Divert excess materials from landfill to site approved by Departmental Representative.

## **1.7 ENVIRONMENTAL PROTECTION**

- .1 Ensure Work is done in accordance with Section 01 35 43 - Environmental Procedures.

## **1.8 EXISTING CONDITIONS**

- .1 Description of Marine structures relating to this project is the following:
  - .1 Protection rock fill Wharf (Berlin Wall). The north and south piers are constructed Berlin Wall with a beam system and reinforced concrete slab. The construction of the rock protection will be done without any equipment only runs on piers so as not to further reduce their structural stability.
  - .2 Protection rock fill Wharf (sheet pile wall): The inner harbour is constructed of two parallel sheet pile walls. These sheet-pile-walls are badly damaged in the tidal zone. Large gaps (see photos attached) in the pile significantly reduce their structural stability.
  - .3 Caution: Pay particular attention to the demolition of the pile near the boat ramp into the water. Use the equipment and methods needed to use and maintain the stability of adjacent structures.
- .2 The existing conditions are defined as state structures to demolish the date of acceptance of the bid.
  - .1 Remove, protect and store the recovered items, as directed by the Departmental Representative. Collect items designated by the Departmental Representative. Give them to the Departmental Representative as directed.

## **1.9 METHOD OF CONSTRUCTION**

- .1 Techniques and method of construction are the responsibility of Contractor.
- .2 The Contractor should obtain his own experts advice with regard to techniques and method of construction to use to demolish the work stipulated in this contract.
- .3 Contractor shall consider that existing structures to rebuild have no structural bearing strength to be functional for users, show a high level of deterioration and may cave in according to marine and climatic conditions.
- .4 So he shall evaluate the solidity of the structures to be demolished and choose a method of construction fitted for work requirements. Structural state change during work shall not be, on no account, a valid reason to sue for extra fees.
- .5 Caution : the contractor shall pay particular attention to the demolition of the sheet piling near the launching ramp. Use the equipment and methods necessary in order to keep the use and stability of adjacent structures.

- .6 Take note that the movement of equipment on piers North and South will be prohibited, and during the duration of the work to not reduce the structural stability of this part of the harbour. The contractor may need to use a work method adapted to this constraint.

## **Part 2 Products**

### **2.1 EQUIPMENT**

- .1 Equipment and heavy machinery to:
  - .1 On-road vehicles to meet applicable emission requirements as prescribed in CEPA-SOR/2003-2, On-Road Vehicle and Engine Emission Regulations.
  - .2 Off-road vehicles to meet applicable emission requirements as prescribed in EPA CFR 86.098-10 and EPA CFR 86.098-11.
- .2 Leave machinery running only while in use, except where extreme temperatures prohibit shutting machinery down.

## **Part 3 Execution**

### **3.1 PROTECTION**

- .1 Prevent movement, settlement or damage of adjacent structures, services, paving and adjacent grades.
  - .1 Provide bracing, shoring and underpinning as required.
  - .2 Repair damage caused by demolition as directed by Departmental Representative.
- .2 Support affected structures and, if safety of structure being demolished or adjacent structures or services appears to be endangered, take preventative measures, stop Work and immediately notify Departmental Representative.

### **3.2 PREPARATION**

- .1 Disconnect and re-route electrical and telephone service lines entering buildings to be demolished.
  - .1 Post warning signs on electrical lines and equipment which must remain energized to serve other properties during period of demolition.
- .2 Disconnect and cap mechanical services.
  - .1 Sewer and water lines on wharf.
  - .2 Other underground services: remove and dispose of as directed by Departmental Representative.
  - .3 Locate and protect utility lines. Do not disrupt active or energized utilities designated to remain undisturbed.

### **3.3 DEMOLITION**

- .1 Remove parts of existing Work to permit new construction. Sort materials into appropriate piles for reuse and recycling.
- .2 Refer to demolition drawings and specifications for items to be salvaged for reuse.
- .3 Remove items to be reused, store as directed by Departmental Representative and re-install under appropriate section of specification.
- .4 Dispose of removed materials to appropriate recycling facilities or reuse facilities except where specified otherwise, in accordance with authority having jurisdiction.
- .5 Demolish the structures up to the limits indicated in the RM13008C plan.
- .6 At the end of each work's day, ensure that the work is safe and stable.

### **3.4 STOCKPILING**

- .1 Label stockpiles, indicating material type and quantity.
- .2 Designate appropriate security resources/measures to prevent vandalism, damage and theft.

### **3.5 REMOVAL FROM SITE**

- .1 Transport material designated for alternate disposal to approved facilities or receiving organizations listed in waste reduction workplan and in accordance with applicable regulations. Do not deviate from facilities or receiving organizations listed in waste reduction workplan without prior written authorization from Departmental Representative.
- .2 Dispose of materials not designated for alternate disposal in accordance with applicable regulations. Disposal facilities must be approved of and listed in waste reduction workplan. Do not deviate from disposal facilities listed in waste reduction workplan without prior written authorization from Departmental Representative.
- .3 If they hinder the progress of the work, deposit materials must be evacuated according to the instructions of the departmental representative.
- .4 Evacuate deposit materials of a similar nature and must be disposed of according the same ecological method, once the collection of these finished materials.

### **3.6 WORK**

- .1 Demolition material mainly, include but not limited : the steel sheet piling, steel plates, iron C, ladders, rods and moises of steel, concrete, concrete reinforcement, non treated wood, gravel, PIN, bolts and drift bolts, etc.

### **3.7 CLEANING AND RESTORATION**

- .1 Keep site clean and organized throughout demolition procedure.

- .2 Upon completion of project, reinstate areas, parking surfaces, walkways, light standards, affected by Work to match condition of adjacent, undisturbed areas.

**END OF SECTION**

**Part 1            General**

**1.1               RELATED REQUIREMENTS**

- .1       Section 01 11 01 – Work related general information.
- .2       Section 03 20 00 – Concrete reinforcing

**1.2               REFERENCES**

- .1       Canadian Standards Association (CSA International)
  - .1       CSA-A23.1-04/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
  - .2       CAN/CSA-S269.3-M92(R2003), Concrete Formwork, National Standard of Canada

**1.3               DELIVERY, STORAGE AND HANDLING**

- .1       Waste Management and Disposal:
  - .1       Separate waste materials for reuse and recycling in accordance with Section 01 74 21 – Construction-demolition Waste Management And Disposal.
  - .2       Send unused wood to a recycling facility.

**Part 2           Products**

**2.1               MATERIALS**

- .1       Formwork materials:
  - .1       For concrete without special architectural features, use wood and wood product formwork materials to CAN/CSA-O86.
  - .2       For concrete with special architectural features, use formwork materials to CSA-A23.1/A23.2.
- .2       Form ties:
  - .1       For concrete not designated “Architectural”, use removable or snap-off metal ties, fixed or adjustable length, free of devices leaving holes larger than 25 mm diameter in concrete surface.
  - .2       For Architectural concrete, use snap ties complete with plastic cones and light grey concrete plugs.
- .3       Form stripping agent: colourless mineral oil, non-toxic.
- .4       Falsework materials: to CSA-S269.1.

**Part 3            Execution**

**3.1                FABRICATION AND ERECTION**

- .1        Verify lines, levels and centres before proceeding with formwork/falsework and ensure dimensions agree with drawings.
- .2        Obtain Departmental Representative's approval for use of earth forms framing openings not indicated on drawings.
- .3        Fabricate and erect falsework in accordance with CSA S269.1.
- .4        Do not place shores and mud sills on frozen ground.
- .5        Fabricate and erect formwork in accordance with CAN/CSA-S269.3 to produce finished concrete conforming to shape, dimensions, locations and levels indicated within tolerances required by CSA-A23.1/A23.2.
- .6        Align form joints and make watertight.
  - .1            Keep form joints to minimum.
- .7        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.

**3.2                REMOVAL AND RESHORING**

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

**END OF SECTION**



**Part 1            General**

**1.1                CONNEXS SECTIONS**

- .1        Section 03 30 00.01 - Cast-in-place Concrete short form

**1.2                REFERENCES**

- .1        American Concrete Institute (ACI)
  - .1        SP-66-04, ACI Detailing Manual 2004.
    - .1        ACI 315-99, Details and Detailing of Concrete Reinforcement.
    - .2        ACI 315R-04, Manual of Engineering and Placing Drawings for Reinforced Concrete Structures.
  - .2        Canadian Standards Association (CSA International)
    - .1        CSA-A23.1-09/A23.2-09, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
    - .2        CSA-A23.3-04(R2010), Design of Concrete Structures.
    - .3        CAN/CSA-G30.18-M92(R2002), Billet-Steel Bars for Concrete Reinforcement, A National Standard of Canada.
    - .4        CSA-G40.20/G40.21-04(R2009), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
    - .5        CSA W186-M1990(R2007), Welding of Reinforcing Bars in Reinforced Concrete Construction.
  - .3        Reinforcing Steel Institute of Canada (RSIC)
    - .1        RSIC-2004, Reinforcing Steel Manual of Standard Practice.

**Part 2            Products**

**2.1                MATERIALS**

- .1        Substitute different size bars only if permitted in writing by Departmental Representative.
- .2        Reinforcing steel: billet steel, grade 400, deformed bars to CAN/CSA-G30.18, unless indicated otherwise.
- .3        Cold-drawn annealed steel wire ties: to ASTM A497/A497M.
- .4        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 approval for locations of reinforcement splices other than those shown on placing drawings.
- .3 Upon approval of Departmental Representative, weld reinforcement in accordance with CSA W186.
- .4 Ship bundles of bar reinforcement, clearly identified in accordance with bar bending details and lists.

### **Part 3 Execution**

#### **3.1 FIELD BENDING**

- .1 Do not field bend or field weld reinforcement except where indicated or authorized by Departmental Representative.
- .2 When field bending is authorized, bend without heat, applying slow and steady pressure.
- .3 Replace bars, which develop cracks or splits.

#### **3.2 PLACING REINFORCEMENT**

- .1 Place reinforcing steel as indicated on placing drawings and in accordance with CSA-A23.1/A23.2.
- .2 Use plain round bars as slip dowels in concrete.
- .3 Prior to placing concrete, obtain Departmental Representative's approval of reinforcing material and placement.

#### **2.3 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Waste Management: separate waste materials for reuse/recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

**END OF SECTION**

**Part 1            General**

**1.1               RELATED REQUIREMENTS**

- .1       Section 03 10 00 – Concrete Forming and Accessories.
- .2       Section 03 20 00 – Concrete Reinforcing.

**1.2               REFERENCES**

- .1       Abbreviations and Acronyms:
  - .1       Cement: hydraulic cement or blended hydraulic cement (the “b” suffix denotes blended product).
    - .1       Type GU or GUb - General use cement.
- .2       Reference Standards:
  - .1       CSA International
    - .1       CSA A23.1/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
    - .2       CSA A283-06 R2011, Qualification Code for Concrete Testing Laboratories.
    - .3       CSA A3000-08, Cementitious Materials Compendium (Consists of A3001-88).

**1.3               ACTION AND INFORMATIONAL SUBMITTALS**

- .1       Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2       At least 4 weeks prior to beginning Work, provide Departmental Representative with samples of materials proposed for use as follows:
  - .1       Curing compound.
  - .2       Type of supplementary cementing material.
  - .3       Type of blended hydraulic cement.
  - .4       Admixture.
  - .5       Fine and coarse aggregate.
- .3       Provide testing results and reports for review by Departmental Representative and do not proceed without written approval when deviations from mix design or parameters are found.
- .4       Concrete hauling time: provide for review by Departmental Representative deviations exceeding maximum allowable time of 120 minutes for concrete to be delivered to site of Work and discharged after batching.

**1.4               DELIVERY, STORAGE AND HANDLING**

- .1       Delivery and Acceptance Requirements:

- .1 Concrete hauling time: deliver to site of Work and discharged within 120 minutes maximum after batching.
  - .1 Do not modify maximum time limit without receipt of prior written agreement from Departmental Representative and concrete producer as described in CSA A23.1/A23.2.
  - .2 Deviations to be submitted for review by Departmental Representative.
- .2 Concrete delivery: ensure continuous concrete delivery from plant meets CSA A23.1/A23.2.
- .3 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, and packaging materials, in accordance with section 01 74 21 – Construction/Demolition Waste Management.

## **1.5 Management and waste disposal**

- .1 Route concrete and the concrete constituents unused to a local recycling facility authorized by the Departmental Representative.
- .2 Route unused additives to a site approved collection hazardous materials authorized by the Departmental Representative.
- .3 It is forbidden to dump unused adjuvants in sewers, in a course of water, in a lake, on the ground or at any other place where it may present a risk to health or the environment.

## **Part 2 Products**

### **2.1 FORMS**

- .1 Materials formwork
  - .1 For concrete without architectural features, use wood and wood products, formwork materials to CSA 0121, CAN/CSA-086, CSA 0437 Series - F93 (R2006) and CSA0153.
  - .2 For concrete with architectural features, use of formwork materials to CSA-A23.1/A23.2.
- .2 Form ties
  - .1 For concrete not designated “Architectural”, use of removable metal or snap-off materiel ties, fixed length or control, having no device that could leave on the surfaces of concrete holes with a diameter greater than 25 mm.
  - .2 In the case of concrete to present architectural features, use snap ties complete with plastic cones and light gray concrete plugs.
- .3 Form release: non-toxic, biodegradable, low VOC content.
- .4 Falsework materials: to CSA Standard S269.1.
- .5 Construction and installation
  - .1 Verify lines, levels and centres before proceeding with formwork/falsework and ensure dimensions agree with drawings.

- .2 Obtain Departmental Representative's approval for use of earth forms framing openings not indicated on drawings.
- .3 Hand trim sides and bottoms and remove loose earth from earth forms before placing concrete.
- .4 Fabricate and erect falsework in accordance with CSA S269.1.
- .5 Fabricate and erect formwork in accordance with CAN/CSA-S269.3 to produce finished concrete conforming to shape, dimensions, locations and levels indicated within tolerances required by CSA-A23.1/A23.2.
- .6 Align form joints and make watertight.
- .7 Keep form joints to minimum.
- .8 Use 25 mm chamfer strips on external corners and/or 25 mm fillets at interior corners, joints, unless specified otherwise.
- .9 Form chases, slots, openings, drips, recesses, expansion and control joints as indicated.
- .10 Incorporate anchors, sleeves and other embedded items required for works specified in other sections.
- .11 Ensure that anchors and inserts will not protrude beyond surfaces designated to receive applied finishes, including painting.
- .12 Before pouring the concrete, clean forms according to the CSA-A23.1/A23.2.
- .6 Remove formwork:
  - .1 Leave formwork in place for 24 hours after placing concrete.

## **2.2 CONCRETE REINFORCING**

- .1 Reinforcing steel, deformed steel wire for concrete reinforcement, chairs, bolsters, bar supports: to Section 03 20 00 – Concrete Reinforcing.

## **2.3 MIXE**

- .1 Prescriptive Method for specifying medium concrete: mix in accordance with CSA A23:
  - .1 Concrete type 1: wall concrete:
    - .1 Use cement type GU-SF.
    - .2 Compressive strength at 28 days age: 35 MPa minimum.
    - .3 Class of exposure: C-1.
    - .4 Water/cement ratio, maximum mass: 0.40.
    - .5 Coarse aggregate nominal size: 50-80 microns.
    - .6 Slump: at time and point of discharge: 150 to 200 mm.
    - .7 Admixture: approved by Departmental Representative and used to correct a default mixture or to facilitate the pouring.

## **2.4 MATERIALS/EQUIPMENT**

- .1 Cement: for general use, in accordance with CSA standard A3001, GU type or GUb.
- .2 Water: to CSA A23.1
- .3 Aggregates: to CSA A23.1/A23.2.

- .4 Admixture:
  - .1 Air Coach: to ASTM C260 standard.
  - .2 Chemical admixture: to ASTM C494 standard. Departmental Representative must accept accelerator or retarder used to pouring in cold weather or hot weather.
- .5 Curing: white, to CSA A23.1/A23.2.

### **Part 3 Execution**

#### **3.1 PREPARATION**

- .1 Obtain the written approval from from Departmental Representative before the pouring.
  - .1 Provide Departmental Representative 48 hours notice before each concrete pour.
- .2 Place concrete reinforcing in accordance with Section 03 20 00 - Concrete Reinforcing.
- .3 During concreting operations:
  - .1 Development of cold joints not allowed.
  - .2 Ensure concrete delivery and handling facilitates placing with minimum of rehandling, and without damage to existing structure or Work.
- .4 Protect previous Work from staining.
- .5 Ensure reinforcement and embedded parts are not moved during commissioning pouring of concrete.
- .6 Prior to placing of concrete obtain Departmental Representative's approval of proposed method for protection of concrete during placing and curing in adverse weather.
- .7 Clean and remove stains prior to application of concrete finishes.
- .8 Do not place load upon new concrete until authorized by Departmental Representative.

#### **3.2 INSTALLATION/APPLICATION**

- .1 Do cast-in-place concrete work in accordance with CAN/CSA A23.1.
- .2 Building the wall with reinforcing steel as indicated on the plan.
- .3 Do not pour fresh concrete into water.
- .4 Inserts:
  - .1 Cast in sleeves, ties, slots, anchors, reinforcement, frames, conduit, bolts, waterstops, joint fillers and other inserts required to be built-in.
- .5 Finishes:
  - .1 Formed concrete surfaces in accordance with CSA A23.1.

#### **3.3 DRAINAGE HOLES**

- .1 Built a concrete coating around the prefab pipe under the existing drainage manhole.

- .2 Level the foundation with aggregates 14-20 mm.
- .3 Drill the existing manhole and seal it with a concrete mass as indicated on drawing.
- .4 Install a grating at the exit pipe with galvanized reinforcing. Fix the grating with chemical anchors.

### **3.4 FAUTLY CONCRETE**

- .1 Concrete that does not comply with the requirements of the drawings and specifications or that the apparent surface is not accepted by the Departmental Representative shall be considered faulty.
- .2 Repair of exposed concrete surfaces shall not be undertaken before Departmental Representative notes defaults.
- .3 Defaults do not affect the structural capacity, such as not conform concrete to details and elevations indicated on the drawings, the fastening pin holes and concrete with small cavities on the surface caused by air bubbles or honeycombs:
  - .1 Defaults can be repaired if usual methods and durable material that provide the repaired surfaces will be identical, in the short and long term, to adjacent surfaces.
  - .2 Built parts where including too many defaults, must be demolished and rebuilt without cost for the Departmental Representative.
- .4 Concrete defaults that affect the structural capacity, such as concrete with insufficient strength and concrete with honeycombs or imperfections that compromise its structural efficiency, will be demolished and rebuilt without cost for Departmental Representative.
- .5 Apparent repair surfaces are subject to be approved by the Departmental Representative. It may require representative repair defaults to ensure uniformity and similarity for surfaces and joint concealment. If repairs are rejected for their appearance, parts of faulty concrete will be rebuilt to the Departmental Representative satisfaction.
- .6 Smudges, streaks and other unsightly irregularities of exposed surface must be removed within 24 hours after stripping.

### **3.5 IMPLEMENTATION OF TOLERANCE**

- .1 Concrete tolerance to CSA A23.1; Straightedge Method.

### **3.6 FIELD QUALITY CONTROLE**

- .1 Inspection and testing of concrete and concrete materials will be carried out by testing laboratory designated by Departmental Representative for review to CSA A23.1/A23.2 and its satisfaction and the cost of these tests will be undertake by Departmental Representative.
- .2 Departmental Representative will undertake the cost of testing for ministerial purposes.
- .3 Departmental Representative will collect additional samples at cold weather concreting work. The treatment of these samples should be at the site in the same conditions as mixing concrete.

- .4 Inspection and testing by the Consultant can neither replace nor supplement the quality control performed by the Contractor, nor does it emit its contractual responsibilities in this regard.

### **3.7 CLEANING**

- .1 Perform cleanup in accordance with Section 01 74 11 – Cleaning.
- .2 Designate cleaning area for tools to limit water use and runoff.
- .3 Cleaning of concrete equipment to be done in accordance with Section 01 35 43 Environmental Procedures
- .4 Waste Management: separate waste materials for reuse/reuse and their recycling in accordance with Section 01 74 21 – Construction/Demolition Management and Disposal.

**END OF SECTION**



**Part 1            General**

**1.1               RELATED SECTIONS**

- .1        01 33 00 – Submittal procedures
- .2        01 74 21 – Construction-demolition Waste Management and Disposal
- .3        03 30 00.01 – Cast-in-place Concrete short form.

**1.2               REFERENCES**

- .1        ASTM International
  - .1        ASTM A53/A53M-07, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
  - .2        ASTM A269-08, Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
  - .3        ASTM A307-07b, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
- .2        CSA International
  - .1        CSA G40.20/G40.21-04(R2009), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
  - .2        CAN/CSA G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
  - .3        CSA W48-06, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).
  - .4        CSA W59, Welded Steel Construction (Metal Arc Welding) Metric.

**1.3               ACTION AND INFORMATIONAL SUBMITTALS**

- .1        Product Data:
  - .1        Submit manufacturer's instructions, printed product literature and data sheets in accordance with Section 01 33 00 - Submittal Procedures.
  - .2        Submit two copies of WHMIS MSDS in accordance with Section 01 33 00 - Health Submittal Procedures. Indicate VOC concentration.
- .2        Shop Drawings:
  - .1        Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
  - .2        Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

**1.4               DELIVERY, STORAGE AND HANDLING**

- .1        Deliver, store and handle materials in accordance with section 01 61 00 – common Product Requirements.

- .2 Storage and Handling Requirements:
  - .1 Replace defective or damaged materials with new.

## **1.5 MANAGEMENT AND DISPOSAL**

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 – Management and Disposal of Construction/Demolition.
- .2 Remove from site all packing materials and at appropriate recycling facilities.
- .3 Collect and separate packaging of corrugated paper or plastic all materials and place them in appropriate on-site bins for recycling in accordance with Waste Management Plan.
- .4 Divert unused metal materials to a metal recycling facility approved by the Departmental Representative.

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Steel sections and plates: to CSA G40.20/G40.21, Grade 350W for steel section and 300W for plates.
- .2 Welding materials: to CSA W59.
- .3 Welding electrodes: to CSA W48 Series.
- .4 Bolts and anchor bolts: to ASTM A307.

### **2.2 FABRICATION**

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

### **2.3 FINISHING**

- .1 Galvanizing: Hot-dip, with zinc coating  $600 \text{ s/m}^2$ , according to ASTM A123/A123M.

## **Part 3 Execution**

### **3.1 REVIEW**

- .1 Verification of conditions: Before proceeding with the installation of metal structures, ensure that the surface condition/media previously implemented under other sections of contracts is acceptable and can perform the work in accordance with manufacturer's written instructions.

### **3.2 ASSEMBLY**

- .1 Unless otherwise specified, perform welding in accordance with CSA W59.
- .2 Mount metalwork square, plumb and level, aligned and adjusted accurately and ensure that the joints and crossovers are tight.
- .3 Provide the necessary work of other trades, according to the nomenclature and shop drawings submitted components.
- .4 Assemble the elements on site using bolts to CSA S16 or welding, as shown on the plan.

### **3.3 FINISHING**

- .1 Galvanized Steel:  
  
The following metal parts are galvanized bolts, nuts, washers and plates, as shown on drawings.

### **3.4 PREPARATION**

- .1 Remove the iron L and U existing plate welded on top of the piles in areas where there is a wheel guard to install.
- .2 Remove concrete slab concrete bonded to the steel sheet pile to allow the installation of iron L by bolting as indicated on drawings.

### **3.5 EXECUTION**

- .1 In the woodwork, each rock bolt shall be provided with two (2) ordinary steel washers. Heads and nuts and bolts will also evenly over slices. They will be drowned in touch pieces of wood on all outer surfaces of wheel holes will be drilled to the same diameter as the bolts used.
- .2 Drill each wing of the existing pile for installing irons L. Place steel shims as needed to thoroughly subject to the L chains of steel sheet pile.

### **3.6 CLEANING**

- .1 Cleaning up work: perform cleanup in accordance with Section 01 74 11 – Cleaning.
  - .1 Keep the site clean at each end day.
- .2 Final cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

### **3.7 PROTECTION**

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by metal fabrications installation.

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Harbour Refection  
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Section 05 50 00  
METAL FABRICATIONS  
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**END OF SECTION**

**Part 1 General**

**1.1 RELATED SECTIONS**

- .1 Section 05 50 00 – Metal Fabrications.

**1.2 REFERENCES**

- .1 American Society for Testing and Materials International (ASTM)
  - .1 ASTM D1761, Standard Test Methods for Mechanical Fasteners in Wood.
- .2 Canadian Standards Association (CSA) / CSA International
  - .1 CAN/CSA 080-F08, Wood Preservation.
- .3 National Commission Lumber Grades (NLGA)
  - .1 Classification Rules for Canadian Lumber, 2008.

**1.3 DOCUMENTS/SAMPLES TO SUBMIT**

- .1 Submit documents and samples in accordance with Section 01 33 00 - Submittal Procedures.

**1.4 QUALITY ASSURANCE**

- .1 Marking wood engraving classification of a body recognized by the Council Accreditation of Canadian Standards Commission lumber.

**1.5 DELIVERY, STORAGE AND HANDLING**

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

**Part 2 Products**

**2.1 MATERIALS**

- .1 All wood species shall conform to the requirements of the 2012 entitled NLGA “Classification Rules for Canadian Lumber”. The quality of the wood will be No.1 or standard. In the standard quality, no decay will not be tolerated.
- .2 All wood used on each piece must have the seal of the AMBSQ. The Contractor shall provide to the Departmental Representative certificate quality, AMBSQ.
- .3 The wood used in the construction will be Douglas fir Coast or hemlock Pacific Coast of eastern hemlock, red pine and jack pine.
- .4 The Coast Douglas fir and hemlock Pacific Coast meet the requirements the British Columbia Lumber Manufacturers’ Association entitled “Standard Specifications for Construction Grade”.

- .5 All wood used is pressure treated in accordance with CAN/CSA SERIES 080-09. All bevels are cut before treatment.
- .6 The wood is cut square before treatment after NLGA standard 748-B.
- .7 In any case, spruce and balsam fir only be accepted when treated wood is specified.
- .8 Any material pressure treated requiring cutting to be adjusted will be coated, while it is dry, three (3) layers of condoms as required in the standard CAN/CSA 080-09 SERIES. All holes in pieces of wood will be treated in this manner.

## **2.2 PRODUCT TREATMENT OF WOOD**

- .1 Preservative applied under pressure, according to CAN/CSA 080-08 SERIES. The wood is treated with chromated copper arsenate (CCA) with a retention rate minimum: ACC 24.0 kg/m<sup>3</sup>.
- .2 All materials pressure treated, requiring cutting to be adjusted, will be coated, while it is still dry, three (3) layers of preservative as required in the standard CAN/CSA-080-M. All holes in pieces of wood will be treated that way.

## **Part 3 Execution**

### **3.1 PREPARATION**

- .1 Store wood and derivatives.

### **3.2 WHEEL GUARD**

- .1 Wheel guard with two (2) pieces of treated wood 254 x 254 mm will be built as indicated on the plan.
- .2 The wheel guard will be bolted to a galvanized steel plate PI 450 x 150 x 15.8 mm liable to the concrete wall with anchor bolts as indicated on the plan.
- .3 The wheel guard shall be liable to piles by mechanical galvanized steel bolts 19 mm diameter and right length, as indicated on the plan.
- .4 The wheel guard is bolted to a steel plate galvanized PI 455 x 150 x 15.8 mm welded two steel sections L 200 x 100 x 10 mm continuous galvanized steel.
- .5 Galvanized steel bolts of 19 mm will be used to attach the wheel guard on the steel pile. Provide steel shims to ensure enlignement right wheel guard.
- .6 All head bolts will be covered with a sealer Dymeric type or equivalent.

**END OF SECTION**

**Part 1            General**

**1.1               RELATED REQUIREMENTS**

- .1        Section 01 33 00 – Submittal procedures.
- .2        Section 01 74 21 – Construction/demolition waste management.
- .3        Section 31 23 33.01 – Excavating, trenching and backfilling.

**1.2               REFERENCES**

- .1        ASTM International
  - .1        ASTM D4791-[10], Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate.
- .2        Canadian standards association CSA
  - .1        CSA-A23.1-09/A23.2-09, Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete.

**1.3               ACTION AND INFORMATIONAL SUBMITTALS**

- .1        Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2        Allow continual sampling by Departmental Representative during production.
- .3        Provide Departmental Representative with access to source and processed material for sampling.
- .4        Install sampling facilities at discharge end of production conveyor, to allow Departmental Representative to obtain representative samples of items being produced. Stop conveyor belt when requested by Departmental Representative to permit full cross section sampling.
- .5        Pay cost of sampling and testing of aggregates which fail to meet specified requirements.

**1.4               DELIVERY, STORAGE AND HANDLING**

- .1        Transportation and Handling: handle and transport aggregates to avoid segregation, contamination and degradation.

**1.5               WASTE MANAGEMENT AND ELIMINATION**

- .1        Disposal the unused aggregate to a career or an installation local processing approved by the Departmental Representative

**Part 2           Products**

**2.1               MATERIALS**

- .1        Aggregate quality: sound, hard, durable material free from soft, thin, elongated or laminated particles, organic material, clay lumps or minerals, free from adherent coatings and injurious amounts of disintegrated pieces or other deleterious substances.

- .2 Flat and elongated particles of coarse aggregate: to ASTM D4791.
  - .1 Greatest dimension to exceed [5] times least dimension.
- .3 Fine aggregates satisfying requirements of applicable section to be one, or blend of following:
  - .1 Natural sand
  - .2 Artificial sand.
  - .3 Screenings produced in crushing of quarried rock, boulders, gravel or slag.
- .4 Coarse aggregates 20 mm, satisfying requirements of applicable section to be one of or blend of following:
  - .1 Come from a career of hard and durable stone and consist of crushed particles and angular. The use of shale or slate and round stones will be accepted in any part of the work. The stones used are free of planes of weakness such stratification, bedding, cracks, argillite beds, etc.
  - .2 Have a minimum density of 2600 kg per cubic meter, showing less than 1% absorption rate following CAN/CSA-A23.2-M90 and provide less than 1.5% loss in durability tests sulphate magnesium after 5 cycles (ASTM-90 or C88-CAN/CSA-A23.2-M90).
  - .3 The particle size distribution should be within the limits for tests with the ASTM C136 standard. The size of the screen should be according to the standard

## **2.2 SOURCE QUALITY CONTROL**

- .1 Inform Departmental Representative of proposed source of aggregates and provide access for sampling 4 weeks minimum before starting production.
- .2 If materials from proposed source do not meet, or cannot reasonably be processed to meet, specified requirements, locate alternative source.
- .3 Advise Departmental Representative 4 weeks minimum in advance of proposed change of material source.
- .4 Acceptance of material at source does not preclude future rejection if it fails to conform to requirements specified, lacks uniformity, or if its field performance is found to be unsatisfactory.

## **Part 3 Execution**

### **3.1 PREPARATION**

- .1 Topsoil stripping:
  - .1 Do not handle topsoil while in wet or frozen condition or in any manner in which soil structure is adversely affected.
  - .2 Strip topsoil to depths as indicated] Avoid mixing topsoil with subsoil.
  - .3 Stockpile in locations as indicated by Departmental Representative. Stockpile height not to exceed 2 m.
  - .4 Dispose of topsoil off site.



- .2 Aggregate source preparation:
  - .1 Prior to excavating materials for aggregate production, clear and grub area to be worked, and strip unsuitable surface materials. Dispose of cleared, grubbed and unsuitable materials as directed by Departmental Representative.
  - .2 Where clearing is required, leave screen of trees between cleared area and roadways as directed.
  - .3 Clear, grub and strip area ahead of quarrying or excavating operation sufficient to prevent contamination of aggregate by deleterious materials.
  - .4 When excavation is completed dress sides of excavation to nominal 1.5:1 slope, and provide drains or ditches as required to prevent surface standing water.
  - .5 Trim off and dress slopes of waste material piles and leave site in neat condition.
- .3 Aggregates Processing:
  - .1 Process aggregate uniformly using methods that prevent contamination, segregation and degradation.
  - .2 Blend aggregates, as required, including reclaimed materials that meet physical requirements of specification is permitted in order to satisfy gradation requirements for material and, percentage of crushed particles, or particle shapes specified. Use methods and equipment approved in writing by Departmental Representative.
  - .3 Where necessary, screen, crush, wash, classify and process aggregates with suitable equipment to meet requirements. Use only equipment approved in writing by Departmental Representative.
  - .4 When operating in stratified deposits use excavation equipment and methods that produce uniform, homogeneous aggregate gradation.
- .4 Stockpiling:
  - .1 Stockpile aggregates on site in locations as indicated unless directed otherwise by Departmental Representative. Do not stockpile on completed pavement surfaces.
  - .2 Stockpile aggregates in sufficient quantities to meet project schedules.
  - .3 Stockpiling sites to be level, well drained, and of adequate bearing capacity and stability to support stockpiled materials and handling equipment.
  - .4 Except where stockpiled on acceptably stabilized areas, provide compacted sand base not less than 300 mm in depth to prevent contamination of aggregate. Stockpile aggregates on ground but do not incorporate bottom 300 mm of pile into Work.
  - .5 Separate different aggregates by strong, full depth bulkheads, or stockpile far enough apart to prevent intermixing.
  - .6 Do not use intermixed or contaminated materials. Remove and dispose of rejected materials as directed by Departmental Representative within 48 hours of rejection.
  - .7 Stockpile materials in uniform layers of thickness maximum 1.5 m.
  - .8 Uniformly spot-dump aggregates delivered to stockpile in trucks and build up stockpile as specified.
  - .9 Do not cone piles or spill material over edges of piles.

- .10 Do not use conveying stackers.
- .11 During winter operations, prevent ice and snow from becoming mixed into stockpile or in material being removed from stockpile.

### **3.2 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Leave aggregate stockpile site in tidy, well drained condition, free of standing surface water.
- .4 Leave any unused aggregates in neat compact stockpiles as directed by Departmental Representative.
- .5 For temporary or permanent abandonment of aggregate source, restore source to condition meeting requirements of authority having jurisdiction.

**END OF SECTION**

## **Part 1            General**

### **1.1                RELATED REQUIREMENTS**

- .1        Section 01 11 01 – Work related general information.
- .2        Section 31 05 16 – Aggregate.
- .3        Section 31 32 19.01 – Geotextile.

### **1.2                REFERENCES**

- .1        American Society for Testing and Materials International (ASTM)
  - .1        ASTM C117-04, Standard Test Method for Material Finer than 0.075 mm (No.200) Sieve in Mineral Aggregates by Washing.
  - .2        ASTM C136-05, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
  - .3        ASTM D422-63/2002, Standard Test Method for Particle-Size Analysis of Soils.
  - .4        ASTM D4318-05, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- .2        Canadian General Standards Board (CGSB)
  - .1        CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.
  - .2        CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.

### **1.3                DEFINITIONS**

- .1        Excavation classes: one classe of excavation will be recognized; common excavation.
  - .1        Common excavation: excavation of materials of whatever nature, which are not included under definitions of rock excavation.
- .2        Unclassified excavation: excavation of deposits of whatever character encountered in Work.
- .3        Topsoil:
  - .1        Material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.
- .4        Waste material: excavated material unsuitable for use in Work or surplus to requirements.
- .5        Recycled fill material: material, considered inert, obtained from alternate sources and engineered to meet requirements of fill areas.
- .6        Unsuitable materials:
  - .1        Weak, chemically unstable, and compressible materials.
  - .2        Frost susceptible materials:
    - .1        Fine grained soils with plasticity index less than 10 when tested to ASTM D4318, and gradation within limits specified when tested to ASTM D422 and ASTM C136. Sieve sizes to CAN/CGSB-8.2.

.2 Table:

| Sieve Designation | % Passing |
|-------------------|-----------|
| 2.00 mm           | 100       |
| 0.10 mm           | 45 - 100  |
| 0.02 mm           | 10 - 80   |
| 0.005 mm          | 0 - 45    |

.3 Coarse grained soils containing more than [20] % by mass passing 0.075 mm sieve.

#### 1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures. (MG-20, quarry run and 50-150 mm stone)
- .2 Preconstruction Submittals:
  - .1 Submit construction equipment list for major equipment to be used in this section prior to start of Work.
  - .2 Submit records of underground utility locates, indicating: location plan of existing utilities as found in field and location plan of relocated and abandoned services, as required.
- .3 Samples:
  - .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
  - .2 Inform Departmental Representative at least 4 weeks prior to beginning Work, of proposed source of fill materials and provide access for sampling.
  - .3 Submit 70 kg samples of type of fill specified .

#### 1.5 QUALITY ASSURANCE

- .1 Do not use soil material until written report of soil test results are reviewed and approved by Departmental Representative.
- .2 Health and Safety Requirements:
  - .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

#### 1.6 WASTE MANAGEMENT AND DISPOSAL

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

#### 1.7 EXISTING CONDITIONS

- .1 Buried services:
  - .1 Before commencing work verify location of buried services on and adjacent to site.
  - .2 Confirm locations of buried utilities by careful test excavations.
  - .3 Where utility lines or structures exist in area of excavation, obtain direction of Departmental Representative before removing or re-routing. Costs for such Work to be paid by Departmental Representative.

- .4 Record location of maintained, re-routed and abandoned underground lines.
- .5 Confirm locations of recent excavations adjacent to area of excavation.
- .2 Existing buildings and surface features:
  - .1 Conduct, with Departmental Representative, condition survey of existing buildings, fencing, service poles, wires, pavement, survey bench marks and monuments which may be affected by Work.
  - .2 Protect existing buildings and surface features from damage while Work is in progress. In event of damage, immediately make repair as directed by Departmental Representative.

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Fill material: properties to Section 31 05 16 - Aggregate

## **Part 3 Execution**

### **3.1 SITE PREPARATION**

- .1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.

### **3.2 PREPARATION/PROTECTION**

- .1 Protect existing features in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.
- .2 Keep excavations clean, free of standing water, and loose soil.
- .3 Protect natural and man-made features required to remain undisturbed. Unless otherwise indicated or located in an area to be occupied by new construction, protect existing trees from damage.
- .4 Protect buried services that are required to remain undisturbed.

### **3.3 STOCKPILING**

- .1 Stockpile fill materials in areas designated by Departmental Representative.
  - .1 Stockpile granular materials in manner to prevent segregation.
- .2 Protect fill materials from contamination.
- .3 Implement sufficient erosion and sediment control measures to prevent sediment release off construction boundaries and into water bodies.

### **3.4 EXCAVATION**

- .1 Advise Departmental Representative at least 7 days in advance of excavation operations for initial cross sections to be taken.
- .2 Excavate to lines, grades, elevations and dimensions as indicated on drawings.

- .3 No compensation will be paid for excavation outside the demolition limits shown on drawings or determined by the Departmental Representative
- .4 Excavation must not interfere with bearing capacity of adjacent foundations.
- .5 Keep excavated and stockpiled materials safe distance away from edge of trench as directed by Departmental Representative.
- .6 Restrict work done with construction equipment in close proximity to non-backfilled trenches.
- .7 Dispose of surplus and unsuitable excavated material off site.
- .8 Do not obstruct flow of surface drainage or natural watercourses.
- .9 Obtain Departmental Representative approval of completed excavation.
- .10 Install geotextiles in accordance with Section 31 32 19.01 - Geotextiles.

### **3.5 FILL TYPES AND COMPACTION**

- .1 Use types of fill as indicated on drawings. Compaction densities are percentages of maximum densities obtained from ASTM D1557.
  - .1 Fills harbour interior side
    - .1 Ensure that no material is frozen in place
    - .2 Put material in place on a clean and unfrozen surface, without snow and ice.

### **3.6 BACKFILLING**

- .1 Vibratory compaction equipment should allow to obtain materials with density required for work
- .2 Do not proceed with backfilling operations until Departmental Representative has inspected and approved installations.
- .3 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.
- .4 Do not use backfill material which is frozen or contains ice, snow or debris.
- .5 Place backfill material, GM20, in uniform layers not exceeding 150 mm compacted thickness up to grades indicated. Compact each layer before placing succeeding layer.
- .6 Profiled and compacted alternately to obtain a foundation layer equally and uniformly compacted.
- .7 Add, if required, water during compaction to obtain density required
- .8 Correct surface irregularities by loosening the soil and adding or removing material until the surface meets the specified tolerances

### **3.7 IMPLEMENTATION OF CONCRETE BLOCKS MATTRESS TYPE ARMAFLEX**

- .1 The putting in place mattress must be done with the device provided by the Ministerial Representative.
- .2 To install mattress putting them down from the top of the slope to the down.

**3.8 RESTORATION**

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

**END OF SECTION**

**Part 1            General**

**1.1            SECTION INCLUDES**

- .1        Materials and installation of polymeric geotextiles used in revetments, breakwaters, retaining wall structures, filtration, drainage structures, roadbeds and railroad beds purpose of which is to:
  - .1            Separate and prevent mixing of granular materials of different grading.
  - .2            Act as hydraulic filters permitting passage of water while retaining soil strength of granular structure.

**1.2            RELATED SECTIONS**

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

**1.3            MEASUREMENT AND PAYMENT**

- .1        Measure geotextiles in square metres of surface covered by material. No allowance will be made for seams and overlaps.

**1.4            REFERENCES**

- .1        American Society for Testing and Materials International, (ASTM).
  - .1            ASTM D4491-99a(2009)e1, Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
  - .2            ASTM D4595-09, Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method.
  - .3            ASTM D4716-08, Test Method for Determining the (In-Plane) Flow Rate Per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head.
  - .4            ASTM D4751-04, Standard Test Method for Determining Apparent Opening Size of a Geotextile.

**1.5            SUBMITTALS**

- .1        Submit product data sheets of proposed product in accordance with section 01 33 00 – Submittal Procedures.
- .2        Two weeks prior to beginning of Work, submit to the Departmental Representative the geotextile technical data specs.

**1.6            DELIVERY, STORAGE AND HANDLING**

- .1        During delivery and storage, protect geotextiles from direct sunlight, ultraviolet rays, excessive heat, mud, dirt, dust, debris and rodents.



## **1.7 WASTE MANAGEMENT**

- .1 Remove off site all packing materials and send them to recycling facilities.

## **Part 2 Products**

### **2.1 MATERIAL**

- .1 Geotextile: woven synthetic fibre fabric, supplied in rolls.
  - .1 Width: 3.5 m minimum.
  - .2 Length: 25 m minimum.
  - .3 Composed of: minimum 85% by mass of polypropylene with inhibitors added to base plastic to resist deterioration by ultra-violet and heat exposure.
- .2 Geotextile, type 1 : geotextile used to built breakwater.

#### Physical properties:

- .1 Thickness: to CAN/CGSB-148.1, No.3-M85, minimum 6.5 mm.
- .2 Grab tensile strength and elongation: to CAN/CGSB-148.1, No.7.3-92.
  - .1 Breaking force: minimum 3300 N, wet condition.
  - .2 Elongation at rupture: minimum 65%.
- .3 Ball burst strength: to CAN/CGSB-4.2, No.11.2, minimum 10 000 KPa, wet condition.
- .3 Geotextile, type II : geotextile used to built concrete panels articulated blocks to protect the slope, under the concrete wall and under granular material GM20 indicated on drawings.

#### Physical properties:

- .1 Thickness: to CAN/CGSB-148.1, No.3-M85, minimum 2.3 mm.
- .2 Grab tensile strength and elongation: to CAN/CGSB-148.1, No.7.3-92.
  - .1 Breaking force: minimum 1200 N, wet condition.
  - .2 Elongation at rupture: minimum 45%.
- .3 Ball burst strength: to CAN/CGSB-4.2, No.11.2, minimum 3150 KPa, wet condition.
- .4 Hydraulic properties:
  - .1 Filtration opening size (FOS): to CAN/CGSB-148.1 No.10-94.

## **Part 3 Execution**

### **3.1 INSTALLATION**

- .1 Place geotextile material by unrolling onto graded surface in orientation, manner and locations indicated and retain in position with weights and securing pins.
- .2 Place geotextile material smooth and free of tension stress, folds, wrinkles and creases.

- .3 Place geotextile material on sloping surfaces in one continuous length from toe of slope to upper extent of geotextile.
- .4 Overlap each successive strip of geotextile 600 mm over previously laid strip.
- .5 Protect installed geotextile material from displacement, damage or deterioration before, during and after placement of material layers.
- .6 Replace damaged or deteriorated geotextile to approval of Departmental Representative.

### **3.2 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

### **3.3 PROTECTION**

- .1 Vehicular traffic not permitted directly on geotextile.

**END OF SECTION**

## **Part 1           General**

### **1.1           LIMITATION OF WORK**

- .1       This section describes the work site preparation, supply of topsoil and seeding in accordance with instructions contained in the plan.

### **1.2           REFERENCE**

- .1       BNQ Standard 0605-030  
Landscaping: Grass planting and seeding.

### **1.3           PRODUCT DATA**

- .1       Submit data sheets in accordance with the requirements of Section 01 33 00.
- .2       Provide cut product data for the following products:
  - .1       Seeds.
  - .2       Mulch.
  - .3       Agents adhesive.
- .3       Submit in writing the following information to the engineer three days before the work begins.
  - The volume capacity of the machine.
  - The amount of product to be used per cell, calculated based on the capacity of the machine.

### **1.4           MACHINERY**

- .1       Seeding should be done with a hydraulic seeder with the following characteristics:
  - Being provided with a tank for the mixture.
  - Being provided with a mechanical stirring and mixing or recirculating system, operable during loading of the tank and sowing.

## **Part 2           Products**

### **2.1           TOPSOIL**

- .1       Loam: too rich topsoil or clay, sand or too poor, whose organic content is between 4% and 5% for the sandy loams and between 2% and 3% for clay soils. The land must be free from dirt basement, roots, plants, toxic materials, pebbles, stones and other foreign matter and must have acidity (pH) of 5.5 to 7.5. Topsoil containing grass or weeds is not acceptable.
- .2       Composition
  - .1       Soil mineral.
  - .1       Of organic compost.

- .2 Part coarse sand.
    - .3 Two parts of loam or topsoil.
  - .2 Soil organic.
    - .1 Two parts of organic compost.
    - .2 Two parts loam or existing topsoil.
    - .3 Part coarse sand.
- .3 Characteristics of mixtures.
  - .1 Soil mineral.
    - .1 5% organic material, pH between 6 and 7.
    - .2 Cationic exchange capacity (CEC) between 10 and 20 meq/100 g.
    - .3 Water retention capacity: up to 20%.
  - .2 Soil organic.
    - .1 Organic matter between 10% and 15%, pH between 6 and 7.
    - .2 Cationic exchange capacity (CEC) between 10 and 20 meq/100g.
    - .3 Water retention capacity: up to 20%.

## **2.2 PRODUCTS SOIL AMENDMENT**

- .1 Fertilizer according to the Fertilizer Act and Fertilizers Regulations of the Government of Canada.
- .2 No chemical fertilizer should be used.

## **2.3 SEED**

- .1 Seed Canada No.1 in accordance with the regulations relating to the seeds of the Government of Canada, with a minimum germination rate of 75% and a purity of 97% and treated with a fungicide product. The composition of the mixture is grass:
  - .1 Mil (Phleum pratense) 50%.
  - .2 Canada bluegrass (Proacompensa) 35%.
  - .3 White clover (Trifolium repens) 15%.
- .2 The seed rate is 255 kg/ha. (5.25 lbs/1000 ft<sup>2</sup>).
- .3 Adhesive dispersion liquid organic water-soluble.
- .4 Hydroseeding mulch, non-toxic, water activated added green dye, free of sprouting and growth with the following characteristics:
  - .1 Wood cellulose fiber.
  - .2 Organic matter content of 95%.
  - .3 pH 6.0.
  - .4 Absorption capacity of water 900%.
- .5 Water, available on the premises as required by pumping the artificial pond.

**Part 3            Execution**

**3.1                INSTALLATION AND SPREAD OF THE EARTH AND VEGETABLE SOIL.**

- .1      Once Departmental Representative has accepted the infrastructure put the topsoil in place.
- .2      Spread topsoil in uniform layers not exceeding 150 mm thick.
- .3      Consider a settlement during the implementation of the land to meet the levels projected.
- .4      Finish the work manually on the soil-covered area in order to respect the indicated profiles and elevations.
- .5      Level the topsoil to eliminate rough and low areas and to ensure the proper flow of surface water. If the soil is too soft or loose, the compacts lightly and roll, rake.
- .6      Use a roll of 50 kg and 900 mm wide, to strengthen the surface of the topsoil.
- .7      Leave the surfaces smooth, uniform, firmand footprint resistant, with a fine and smooth texture.

**3.2                EARTH FINISH**

- .1      Loosen to a depth of 25 mm surfaces designated as requiring work loosening.
- .2      Obtain approval by the Departmental Representative surfaces before starting seeding.

**3.3                PRODUCTS SOIL**

- .1      Apply the fertilizer evenly manufacturer's recommended rate.

**3.4                MIXING SEED**

- .1      Measure quantities by weight or volume using a graduated cylinder by weight the product, to the satisfaction of Departmental Representative. Provide the necessary equipment to measuring quantities.
- .2      Pour the required amount of water in the hydraulic seeder. To the agitator before adding seeding products. Spray mulch and slowly pour in the drill.
- .3      Once all materials paid in the planter and well mixed, add the agent adhesion and mix well.

**3.5                APPLICATION OF MIXTURE OF SEEDING**

- .1      Apply the mixture of seed evenly, giving the optimum jet angle to ensure adherence to the surfaces and seed germination.
  - .1      Use the most appropriate nozzle application.
  - .2      Use hoses hand to plant areas of difficult access and to effectively control the application.
- .2      To ensure a uniform surface coverage, overflow 300 mm on the application adjacent surfaces covered with grass or turf.
- .3      Resume seeding where the application of the mixture is not uniform.
- .4      Remove the spray on structures and surfaces that can not be treated.

- .5 Prevent traffic on seeded areas to the satisfaction of the Departmental Representative.

### **3.6 SEEDING**

- .1 Seed areas between thawing and June 15, obtain the approval of the Departmental Representative seeded at any time.

### **3.7 MAINTENANCE DURING THE PERIOD OF ESTABLISHMENT AND PERIOD WARRANTY**

- .1 Perform maintenance from the date of sowing to the end of the warranty period.
- .2 Water seeded to maintain the optimum level of humidity required areas to ensure germination and continued growth of the grass. Adjust the flow watering so that the soil is not washed away.
- .3 Repair and re-seeding bare surfaces or vegetation is dead.

### **3.8 ACCEPTANCE**

- .1 Planted areas will be accepted 10 weeks after seeding by Departmental Representative if the following conditions are met.
- .2 The vegetation is established uniformly. The surfaces are free of seeded areas eroded or denuded areas of dead vegetation and soil are not apparent.

**END OF SECTION**

**Part 1        General**

**1.1        SCOPE**

- .1        This Section covers the production of stone materials for the project, including submittals for the Departmental Representative's approval, and Quality Control/Quality Assurance (QC/QA) tasks as they relate to the production of stone. The Contractor is responsible for Quality Control. The Departmental Representative is responsible for Quality Assurance.

**1.2        RELATED SECTIONS**

- .1        Section 01 45 00 – Quality Control.

**1.3        REFERENCES**

- .1        The latest editions of the standards and publications listed below form a part of this specification to the extent referenced.
  - .1        American Society for Testing and Materials (ASTM)
    - .1        ASTM C88 Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
    - .2        ASTM C127 Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate
    - .3        ASTM C136 Sieve Analysis of Fine and Coarse Aggregates
    - .4        ASTM C295 Petrographic Examination of Aggregates for Concrete
    - .5        ASTM C535 Standard Test Method for Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
    - .6        ASTM D6928 : Standard Test Method for Resistance of Coarse Aggregate to Degradation by Abrasion in the Micro-Deval Apparatus.
    - .7        ASTM D7012 : Standard Test Method for Compressive Strength and Elastic Moduli of Intact Rock Core Specimens under Varying States of Stress and Temperatures

#### 1.4 MEASUREMENT AND PAYMENT

- .1 Stone provide by PWGSC .

| Categories    | Quantity of stone provided by PWGSC | Quantity required for works |
|---------------|-------------------------------------|-----------------------------|
| 8 to 12 t.m.  | 7 839 mt.                           | 8 439 mt                    |
| 1 to 3 mt.    | 3 500 mt.                           | 5 000 mt.                   |
| 1 to 1,5 mt.  | 5 018 mt.                           | 3 600 mt.                   |
| 100 to 300 kg | 3 322 mt.                           | 3 322 mt.                   |
| 300 to 450 mm | 3 418 mt.                           | 350 mt.                     |
| Quarry run    | 500 mt.                             | 3 500 mt.                   |

#### 1.5 SUBMITTALS

- .1 The following information shall be submitted to the Departmental Representative by the Contractor.
- .1 Stone source information: Within fifteen (15) working days of Contract award, the Contractor shall submit the following information for all proposed stone sources for each stone size classification:
- .1 Name and location of quarry;
  - .2 Areas and lifts of the quarry to be worked;
  - .3 Specific geological stratum or strata to be utilized;
  - .4 Laboratory test records and results (refer to requirements in Table 1) representative of areas and lifts to be worked for this project.
  - .5 List of completed marine projects constructed using the same stone to be furnished for this Project.
- .2 Stone Materials and staff control: Within ten (10) working days of notice of acceptance of offer, the Contractor shall submit a written Stone materials and staff control plan. The Plan shall describe the means and methods to be used for the production, handling, transport, placement and effective inspection of stone materials in a manner which shall result in satisfactory quality of in-place stone construction. Written procedures shall be included for the following:
- .3 Pre-Production Reference Stones: Within twenty (20) working days of notice of acceptance of offer, the Contractor shall provide a set of Pre-Production Reference Stones for evaluation by the Departmental Representative at the source. At least 25 Pre-Production Reference Stones shall be provided. Specific requirements for the Pre-Production Reference Stones are described in Clause 1.9 of this section.
- .4 Revision of Stone Materials and staff Control Plan: If the Contractor elects to initiate a proposal to revise the Stone materials control and staff control plan, the



Contractor shall submit the proposed revision not later than five (5) working days prior to the date it proposes to implement the revision and shall not implement the revision prior to the review of the Departmental Representative. Proposed changes staffing shall likewise be submitted for review. Departmental Representative required revisions to the Plan or staffing shall follow the procedures prescribed elsewhere in this Section.

- .5 Stone Control Plan Reports : The Contractor shall maintain daily reports of all work performed under the approved Plan. The daily reports shall be available for review by the Departmental Representative upon request. In addition, the daily reports shall be assembled at the end of each week and submitted to the Departmental Representative on a weekly basis. Daily reports shall be prepared by each inspector, and shall include the following information:
  - .1 SMC inspector's name.
  - .2 Identification of the stone handling equipment during all phases of the work, and the name(s) of equipment operator(s) used to accommodate the stone inspection.
  - .3 Date of stone inspection.
  - .4 Weather conditions, including temperature.
  - .5 Temperature and date stone was removed from quarry face, and date and details of blasting, if applicable.
  - .6 Location and strata within quarry where stone removal took place (horizontally and vertically).
  - .7 Colour(s) and character(s) used by inspector for spray paint marks and the applicable code for stones which are individually sorted (versus mechanically sorted) and for any rejected stone.
  - .8 Breakdown of the approximate quantity, by classification, of accepted and rejected stone processed for the project during the day.
  - .9 A summary of the cause or causes for most of the rejections of stone occurring during the day.
  - .10 Running total of the quantity of stone shipped from the source to date.
- .6 Gradation Tests: Submit all gradation tests for review, complete with gradation test data sheets, calculations and graphical presentation of results.
- .7 Installation and certification of weigh scale:

The Contractor shall make arrangements for the installation and certification of an electronic weigh scale at the work site before shipping the stones as indicated in 1.4.1.1. Weigh scale installation and certification are provided at Contractor's expense.

At least five (5) working days before loading, submit the details concerning the location and the type of weigh scale installed for the purpose of the project as well as a document certifying the accuracy of the scale(s) under Industry Canada.
- .8 Weigh scale operators:

The Contractor shall provide weigh scale operators and pay all costs involved.

- .9 Other weighing devices:  
Submit the details of the equipment incorporating load cells or other devices to weigh stones individually. These devices are provided at Contractor's expense.
- .10 Certified weight scale tickets:  
A copy of each weight scale tickets, including certification of exact weight, time of weighing and of delivery shall be submitted to the Departmental representative the day following the weigh-in.

## **1.6 TERMINOLOGY**

- .1 The following definitions shall pertain to these terms:
  - .1 Dimensional ratio (l/d) – report between the length (l) and the thickness (d) measured on three axes mutually perpendicular. The length of the stone (l) is the most long distance between two points on the stone (between two opposite corners). The thickness of the stone (d) is the minimal dimension of two opposite faces of the stone.
  - .2 The word “ton” (t) refers to the metric ton (1 t = 1 000 kg).

## **1.7 QUALITY CONTROL**

- .1 The SMC Plan shall be incorporated into the Contractor's overall Quality Control Program (QCP) in accordance with Section 01 45 00.

## **1.8 QUALITY CONTROL STAFFING**

- .1 General:

The Contractor shall provide a qualified full-time Stone Materials Control (SMC) Field Supervisor, and appropriate stone source and loading facility inspector(s). In addition, the Contractor shall retain the services of a Licensed Professional Geologist to assist the SMC Field Supervisor on an “as required” basis throughout the duration of the Work. The SMC staff shall verify that all stone produced, delivered to the Project site, and placed in the Works conforms to the requirements of the Contract Drawings and Specifications.
- .2 Supervisor's qualifications and duties :

The supervisor is responsible for implementing all the elements in the control plan for stones. He has at least two years of specialised experience in the inspection and assessment of armour stone for marine projects. The experience must have been acquired in the quality assessment of the type and size of stone involved in the project at hand. Where the Contractor obtains the stones for this project from a subcontractor, the supervisor shall not be an employee of the latter.

The supervisor shall be responsible for the implementation and fulfilment of the control plan for stones, including the management, control and assessment of the work performed by all the inspectors. He shall provide qualified inspection personnel at all times and

replace any person whose performance is unsatisfactory. The supervisor is responsible for the quality of all stone produced.

.3 Qualifications and Duties of Geologist:

The Geologist shall be a Licensed Professional Geologist, with at least one year of practical experience in armour stone inspection and assessment. The Geologist shall provide assistance to the SMC Field Supervisor during stone source selection, including the completion of visual and petrographic examinations (refer to Table 1), identification of specific areas and lifts of acceptable and unacceptable stone at the source(s) and the selection of Pre-Production Reference Stones. In addition, the Geologist shall be retained during stone production if ongoing Quality Control (QC) or Quality Assurance (QA) activities indicate that the quality of stone being furnished is not as specified or is questionable, as directed by the Departmental Representative.

.4 Qualifications and Duties of Inspectors:

The SMC inspectors shall be persons with sufficient training and a minimum of one year of relevant experience to competently and independently perform the tasks itemized below while under the general supervision of the SMC Field Supervisor.

- .1 Participate in the selection of stone for the Pre-Production Reference Stones and in the evaluation of stone placed in the stockpiles.
- .2 Maintain a clear, legible daily log of activities and observations in a format to be approved by the Engineer. Prepare daily inspection reports and submit in a timely manner.
- .3 Visually inspect every Armour stone to verify that the stone meets the quality requirements of this Section. The examination shall focus on stone quality, fractures, stone geology and other detrimental features that may cause the stone to deteriorate into smaller pieces after it is in place in the Work.
- .4 Clearly mark every acceptable Armour stone with spray paint using a colour and/or symbol system approved by the Departmental Representative. Unless otherwise directed, each stone shall be suitably marked on three mutually perpendicular sides. Inspection duties also include identifying and marking stones that do not meet the criteria for acceptability, including size, quality and shape. Unacceptable stones shall be marked with a spray painted red "X" on three mutually perpendicular sides.
- .5 Measure every Armour stone along three mutually perpendicular axes and estimate its weight, based on the unit weight of that stone type, and its aspect ratio.
- .6 Unless each stone is weighed individually using appropriate equipment, estimate the weight of each unit based on the weight of this type of stone and its dimensions.
- .7 Proceed to regular checks of estimated weights against the scaled weights using a weight measurement method approved by the Departmental Representative.
- .8 Build and maintain separate stockpiles for each category of stone.

- .9 Ensure that rejected stones are stockpiled in the “reject” pile or that they are removed without delay from the site after being marked. Rejected stones shall always be segregated from accepted stones.
- .10 Perform periodic checks that load cells or other equipment-mounted weight scale devices are accurately weighing stone for quality control.

## **1.9 PRE-PRODUCTION REFERENCE STONES**

### **.1 Preparation:**

Within twenty (20) working days of notice of acceptance of offer, the Contractor shall provide a set of Pre-Production Reference Stones. The SMC Field Supervisor or an SMC inspector shall select the Pre-Production Reference Stones for evaluation by the Departmental Representative. The Pre-Production Reference Stones shall be located at the source and be laid out in windrow fashion. At least 25 Pre-Production Reference Stones shall be provided for each Armour stone size classification. The Pre-Production Reference Stones shall be representative of the areas, geologic units, faces, and lifts within the quarry from which the stone will be furnished; the quality of stone to be furnished

### **.2 Inspection of Pre-Production Reference Stones:**

The Contractor's SMC Field Supervisor and all SMC inspectors shall accompany the Departmental Representative during the inspection of the stones. The Contractor shall arrange to have individual stones free from any dust or mud covering the faces, and to have stones turned as necessary to accommodate the Departmental Representative's inspection. The Departmental Representative will mark any unacceptable stones with a red “X” on three mutually perpendicular sides. If twenty per cent (20%) or more of the stones with Contractor shall replace the unacceptable stones for re-inspection. If, after a total of two attempts, the Contractor is unable to present an acceptable set of Pre-Production Reference Stones, the source shall be disapproved for this Contract. The Contractor shall then be required to identify a new source for approval. The Contractor may, of its own accord, choose a new source at the time the first or second set of Pre-Production Reference Stones are found to be unacceptable. The Contractor is responsible for all costs associated with the replacement of stones for sets of Pre-Production Reference Stones, or for changing stone sources. In addition, no extension in the required completion date for this Contract will be allowed because of changing stone sources.

### **.3 Maintenance of Pre-Production Reference Stones as Examples:**

The acceptable Pre-Production Reference Stones, and typical unacceptable stones, as determined by the Departmental Representative, shall remain on display at the quarry as examples (of quality, size and shape requirements) throughout the duration of shipping stone for this Contract. The weight of each acceptable Pre-Production Reference Stone shall be clearly marked on them.

**1.10 ACCEPTANCE DETERMINATION FOR STONE SOURCE(S) AND SMC PLAN**

- .1 The Departmental Representative reserves the right to undertake independent investigations and evaluations as necessary to verify whether or not materials meeting the requirements of these Specifications can be produced from the proposed source(s), including the stone quality tests listed in Table 1. Any additional testing shall be undertaken on stone samples selected by the Departmental Representative. All costs associated with independent investigations and evaluations of the originally proposed stone source(s) shall be the responsibility of the Departmental Representative.
- .2 The Departmental Representative will make an acceptance determination for the Contractor's proposed stone source(s) and SMC Plan, including SMC staff, based on the following information:
  - .1 Review of the Contractor's Stone Source Information and SMC Plan submittals (see paragraphs 1.5.1 and 1.5.2);
  - .2 Visual inspection of the Pre-Production Reference (see paragraph 1.9);
  - .3 Assessment of this information relative to the specified requirements for stone (see paragraph 2.3 and table 1) quality and stone gradation and shape (see paragraph 2.4).
  - .4 Review of results of additional laboratory testing, if required (see paragraph 1.10.1);
- .3 The Departmental Representative will provide a determination of acceptance or rejection of the stone source(s), SMC Plan and SMC staff proposed by the Contractor within ten (10) work days of the date of Departmental Representative inspection of the Pre-Production Reference Stones or receipt of additional laboratory test results, whichever is later.
  - .1 If the stone source, SMC Plan and SMC staff are determined to be acceptable, the Contractor may then proceed with the production of materials for this Contract, provided the materials are consistent with the accepted Pre-Production Reference Stones.
  - .2 If the SMC Plan is rejected, the Contractor is responsible for preparing a new SMC Plan, possibly including new staff, to the satisfaction of the Departmental Representative prior to proceeding with stone production for the project. No additional payment for Work will be made until a suitable SMC plan has been submitted and reviewed by the Departmental Representative. The Contractor is responsible for all costs associated with preparing a new SMC Plan. In addition, no extension in the required completion date for this Contract will be allowed if a new SMC plan is required.
  - .3 If the stone source(s) is rejected, the Contractor is responsible for finding a new source(s), and undertaking additional sampling and testing as required for source approval by the Departmental Representative. The Contractor is responsible for all costs associated with changing stone sources. In addition, no extension in the required completion date for this Contract will be allowed because of changing stone sources.

- .4 No additional time will be added to Contract milestones or delivery dates for the time required for the Departmental Representative to make a determination of acceptance or rejection of the proposed source(s).

## **1.11 QUALITY ASSURANCE**

### **.1 General**

- .1 Quality Assurance (QA) activities shall be performed by the Departmental Representative. These activities are intended to provide independent observations of conformance to the requirements of this Section prior to shipment of the stone to the site, and in no way relieve the Contractor of his responsibilities for Quality Control and in-place requirements.
- .2 The Contractor shall provide equipment and operations to turn and handle disputable stones that should be revaluated by the Departmental Representative.
- .3 In the event that the Departmental Representative's QA activities indicate non-conformance to the requirements of this Section, the Departmental Representative will reject the non-conforming stones. Materials rejected at the source shall be immediately marked (with a red "X" on three mutually perpendicular sides), segregated and removed from the stockpile area .
- .4 If the Departmental Representative, during his QA activities, finds that the quality of stone being furnished is not as specified or is questionable, additional sampling and laboratory testing may be required. The selection of samples (from stockpiles at the site, source or intermediate location, such as a loading dock), and the required testing of stones, shall be as directed by the Departmental Representative. The Contractor shall pay all costs associated with the additional sampling and laboratory testing of stone.
- .5 Continued non-conformance will be considered justification for rejection of the SMC Plan, like describe in section 1.10.3.2, and/or the rejection of the stone source(s), like describe in section 1.10.3.3.

## **Part 2 PRODUCTS**

### **2.1 GENERAL**

- .1 All stone materials to be furnished under this Contract shall meet all requirements specified in this Section of the specifications. The Departmental Representative, at any time during the Contract, may reject materials at the source or at the deposit site for failure to meet the specified requirements. Materials that have been delivered to the deposit site and are rejected, whether in stockpile or in place in the structure, shall be removed from the project at the Contractor's expenses.
- .2 The SMC Plan and QC/QA activities shall be systematically applied throughout the duration of quarry and construction operations for this Project.

## **2.2 STONE SOURCES**

- .1 The Contractor shall be solely responsible that the selected source(s) can meet the delivery schedule and produce the quality and quantity of stone required for the project.
- .2 If the Contractor is unable to obtain a sufficient quantity of acceptable stone materials from the original source(s) during the Contract, the Contractor may request approval to use an alternative source(s). The Contractor will be responsible for all costs associated with changing stone sources, including additional sampling and testing as required for source approval. In addition, no extension in the required completion date for this Contract will be allowed.

## **2.3 STONE QUALITY REQUIREMENTS**

- .1 General (All Stone)
  - .1 All stone shall be highly resistant to weathering, deterioration or disintegration under freeze-thaw and wetting-drying conditions and shall be of a quality to ensure permanence of the structure in the climate in which it is to be used. The stone shall be durable, sound and free from detrimental cracks, seams and other defects, which tend to increase deterioration from natural causes or cause breakage during handling and/or placing. Argillaceous stone or stone with high shale content is more susceptible to weathering, abrasion, thin bedding, close fracturing and other undesirable rock properties and shall not be accepted. Inclusions of dirt, sand, clay, shale, chert, micaceous minerals. pegmatite, oil and oil-stained stones and rock fines or any organic or other deleterious material will not be permitted.
  - .2 Armour Stone A-class
    - .1 Sandstone and conglomerate materials will NOT be acceptable as Armour stone for this Project, whatever the conformity of other specifications.
    - .2 Is there an uncertainty for sandstone or not, the stone shall have a petrography exam (ASTM C295-03). The laboratory fees will be Contractor's expenses.
    - .3 Categories for stone A class are:
      - a) 8 to 12 metric tons
      - b) 1 to 3 metric tons
  - .3 Armour Stone B class
    - .1 The conglomerate will NOT be accepted as B class stone.
    - .2 The stone shall have a minimum weight density of 2600 kg per cubic meter, the absorption degree shall be less than 1% (ASTM-C127) and offer less than 5% of durability loss with the MgSO4 Soundness after 5 cycles (ASTM-C88).
    - .3 The size of stone B class:
      - 1) 0-120 mm : 10% maximum
      - 2) 120-250 mm : 85% minimum
      - 3) 250-300 mm : 5% maximum

.4 The categorie that shal be produce with B class stone is :

a) Quarry run

.4 Stone Sampling and Testing Methods

.1 Test method references are listed in Section 1.3 - References.

.2 Stone samples used for laboratory testing shall be representative of the lithologic unit(s) for each stone classification proposed for use under this Contract.

## **2.4 STONE GRADATIONS AND SHAPES**

.1 At least 90% of stone weight, of same class, 8 to 12 mt and 1 to 3 mt, placed in work shall weight a mass included within this class weight limits.

.2 At most 5% of stone weight, of same class, 8 to 12 mt and 1 to 3 mt, could weight between 0.75 time and one time minimum required weight for this class.

.3 Any stone whose weight will be inferior to 0.75 time minimum weight of superior to 1.25 times maximum weight of class in which it is classified will be refused, removed from quantities and shall be removed from worksite.

.4 In case of contestation about Departmental Representative's decision, Contractor shall demonstrate that involved stones totally meet preceding criteria.

.5 Every broken stones during handling or shipping shall be revaluated based on previus items.

.6 The stone shall be angular or oblong shape with a ratio short-dimensional ( $l / d$ ) up to 3 / 1. It should not be more than 10% of stone having a dimensional ratio greater than 2.5 / 1.



**Table 1 – Required Stone Quality Tests - Test Methods and Acceptance Criteria**

| Test Name                             | Test Method   | Acceptance Criteria  |
|---------------------------------------|---------------|--|
|                                       |               | A-class Stone  |
| Field/Visual Observation/Assessment   |               |  |
| Field Examination <sup>1</sup>        | ASTM D4992-07 | No sandstone or conglomerate<br>No deleterious materials; good to excellent quality for the intended use |
| Petrographic Examination <sup>2</sup> | ASTM C295-03  | No deleterious materials; good to excellent quality for the intended use                                 |
| Weathering Grade                      | Visual        | IA - fresh, unweathered rock<br>IB - faintly weathered rock (staining on major discontinuity surfaces)   |
| Laboratory Tests                      |               |  |
| Bulk Specific Gravity, SSD            | ASTM C127     | 2.65 to 2.85   |
| Water Absorption <sup>3</sup>         | ASTM C127     | < 0.5%   |
| Micro-Deval <sup>4</sup>              | ASTM D6928-06 | < 15   |
| Compressive strength <sup>5</sup>     | ASTM D7012-07 | > 80 MPa   |
| MgSO4 Soundness                       | ASTM C88-05   | < 1.5% loss after 5 cycles   |
| Petrographic Examination <sup>2</sup> | ASTM C295-03  | No deleterious materials; good to excellent quality for the intended use                                 |

**Table 1 Notes:**

1. Field examination shall include the preparation of a written report that includes a summary of the quarry and proposed quarry development plan as per ASTM D4992, including: general lithology; geologic unit and age; source homogeneity; stratigraphic faces; metamorphic and weathering phases; dip, strike and thickness of the bedding; proposed blasting procedures and expected curing time.
2. Petrographic examination shall be repeated before AND after MGSO4 soundness tests. Petrographic examination shall be summarized in a written report that includes the rock's geological name, weathering state, main constituents, texture, anisotropy and porosity. In addition, the report shall identify/discuss the presence of any constituents, presence of micro-fractures and/or signs of induced stress (and therefore possible stress release – see Clause 3.2) that may be of concern for the proposed use.
3. Water absorption test to be repeated on ten (10) separate pieces of stone. All ten (10) tests must meet the specified acceptance criteria.
4. Shall be done with two (2) separates stones.
5. Shall be done with three (3) separates stones.

**Part 3        EXECUTION**

**3.1        PRODUCTION QUALITY CONTROL**

- .1        The Contractor shall perform Quality Control activities throughout the duration of stone production and placement operations in accordance with the requirements of this Section and Section 01 45 00.
- .2        Weighing of stones or re-measuring them shall be performed to verify computed weights when the Departmental Representative brings the size of specific stones into question, or when the SMC inspector observes the need to do so.
- .3        Drop tests shall be performed when the Departmental Representative questions the quality or integrity of specific armour stones, or when the SMC inspector observes the need to do so. Drop tests shall be undertaken as follows:
  - .1        Visually inspect all sides of the stone, and mark/record existing cracks;
  - .2        Lift and drop stone from a height of 3 m onto a rigid surface (bedrock, or similarly sized stone);
  - .3        Visually inspect all sides of the stone for cracks for the opening of existing cracks and/or the development of new cracks;
  - .4        Repeat at least three times, as directed by Departmental Representative;
  - .5        Stone is acceptable for use if there is no opening of existing cracks and no development of new cracks.

**3.2        TRANSPORTATION AND TEMPORARY STOCKAGE**

- .1        The Contractor must arrange transport and store the stones to ensure that the piles are not contaminated by dirt and other materials and to reduce the segregation of materials by size.
- .2        Storage of stones following the dispatch of the quarry shall be subject to the approval of the Departmental Representative.

**END OF SECTION**

**Part 1            General**

**1.1               SCOPE**

- .1        The work covered in this section includes all operations related to the establishment of the stone which is required in the context of the consolidation of the steel sheet piling and jetties North and South, as shown in the plan.

**1.2               RELATED SECTIONS**

- .1        Section 01 11 01 – Work Related General Information.
- .2        Section 01 33 00 – Submittal Procedures.
- .3        Section 01 45 00 – Quality Control.
- .4        Section 35 31 24 – Production of Stone.

**1.3               SUBMITTALS AND SAMPLES**

- .1        The following information shall be submitted to the Departmental Representative.
  - .1        Construction equipment and procedures  
At least ten (10) working days before work inception, the Contractor shall submit his construction procedures which must include:
    - .1        a list of all the equipment and machinery to be used;
    - .2        detailed stone placement methods for each category, and the placement sequencing;
    - .3        an example of daily stone placement report.
  - .2        Inspection techniques and surveying methods  
At least ten (10) working days before undertaking the placement of stones in the structure, the Contractor shall provide the Departmental Representative with the following information for review:
    - .1        Inspection techniques and evaluation criteria applied to the placement of the stones in the structure.
    - .2        Detailed surveying methods implemented to ensure accurate placement, including alignment, levelling and the control of transverse sections during construction.After review by the Departmental Representative, this submittal shall be included in the detailed quality control plan.
  - .3        Existing conditions and verification survey data  
A copy of the record of each verification survey, including existing conditions, shall be submitted to the Departmental Representative within one (1) working day after the survey. Provide submittal in both hard copy and digital formats.

.4 Stone placement reports

The Contractor shall submit daily stone placement reports. The reports shall display, as a minimum, the following information: an estimate of the total tonnage placed; chainings along the control line (LC) between which stones were placed; and the total placement time. The Contractor shall also update work progress drawings indicating (i) dates and locations of stone placement and (ii) verification surveys for each layer of stone, for review by the Departmental Representative at any time.

**Part 2 Products**

**2.1 NOT USED**

.1 Not Used.

**Part 3 Execution**

**3.1 QUALITY CONTROL OF STONE PLACEMENT**

.1 General

.1 The Contractor is responsible for Quality Control and shall establish and maintain a Quality Control Plan.

.2 The Contractor shall keep records of all quality control tests, surveys, inspections, including corrective measures implemented and provide copies to the Departmental Representative.

.2 Survey control

.1 The Contractor shall provide range poles, marker buoys, templates, batter-boards and/or any other means of guidance and control required to place the successive stone layers within construction tolerances.

.2 The Contractor shall provide and maintain chainage markers at 15 m intervals along the work area. Chainage markers shall be visible in both directions along the chaining.

.3 Supply, install and maintain tide scale. Install the instrument to allow direct reading of water level with reference to tidal datum. The type of instrument and its location shall be approved by the Departmental Representative.

.3 Verification surveys

.1 Object

.1 The Contractor shall carry out verification surveys as work progresses to ensure that the lines, elevations and course thicknesses of work performed are within specified tolerances.

.2 Equipment

- .1 Carry out verification surveys using a DGPS, a total station survey instrument and range pole-mounted prism, a surveyor's level, range pole and surveyor's tape; tagline and sounding basket; or other methods in accordance with this section and subject to Departmental Representative's approval. If range poles or soundings poles are used, these devices shall be fitted with a flat, durable 30 cm diameter base.
- .2 Carry out depth measurement by physical contact with the stone using, for example, sounding poles or leadlines. Sonic or electronic measurement are not authorised for depth measurement. Accuracy shall be better than 6 cm.
- .3 Other measurement methods using sonic or electronic methods may be considered subject to approval by the Departmental Representative. The Contractor shall submit evidence of the accuracy of any other method and submit detailed comparison with measurements done by physical contact for all courses of stone.
- .4 The Contractor shall provide the boats, the personnel and all the equipment required to carry out verification surveys safely.

.3 Execution

- .1 Above water surveys shall be undertaken using conventional land surveying methods. For underwater surveying, the Contractor shall move by boat or platform as needed, to each required reading location to cover the whole structure, including the tidal zone.
- .2 All survey verifications are conducted using the survey control line (LC) and chart datum (CD).
- .3 Survey verifications shall be carried out in the presence of the Departmental Representative unless the latter declines to attend.
- .4 For each verification survey carried out, the Contractor shall provide the Departmental Representative with a record of verification surveys displaying the following information:
  - .1 location of the verification survey (station along the control line);
  - .2 category of stone surveyed;
  - .3 date and time of the survey;
  - .4 weather conditions;
  - .5 tide gauge readings at the time of the survey;
  - .6 name of participants;
  - .7 field notes;
  - .8 plot on cross-section paper showing the control line, neat lines and individual elevation readings.
- .5 The exact format of the verification survey record shall be agreed upon by the Departmental Representative and the Contractor.
- .6 The verification surveys of the underlying material (i.e., the existing structure, or the previously placed course of stone) carried out by the contractor involved shall be verified by the Departmental Representative before the next course of stone is placed.

### **3.2 STONE PLACEMENT**

#### **.1 General**

- .1 The establishment of the stone for the consolidation of piers North and South must be carried out without that no machinery or vehicle flows on the docks in Berlin wall to do not reduce their structural stability.
- .2 Stones shall be placed individually as indicated sloped and drawings within the tolerances described in this section.
- .3 Stones of the same category shall be evenly spread by size throughout the work in such way as to avoid concentrations of same size stones in the same area.
- .4 The equipment used to place the stones shall be capable of placing the stones without dropping them from more than 0.3 m above final position; the equipment shall also allow to move the stones and rework their position if need be.
- .5 Place the stones and ensure that they rest firmly onto the stones below and are in steady contact with surrounding stones; to achieve adequate lodging, it may be necessary to change the arrangement of existing adjacent stones.
- .6 Stones must be placed without regular pattern and randomly oriented in such way that joints with adjacent stones are not aligned.
- .7 Perform outer slope finish as the layer of armour stone is placed. The finished slope shall be even and without any voids that can pass the smaller stones underlying filter.
- .8 The approval of stone placement and/or of survey verifications of a course or portion of course is not a final acceptance. Stone work shall be considered final when the Departmental Representative approves the placement and the verification surveys for all the courses in the work zone.
- .9 Before final acceptance, any damage to the existing structure or to partially built or approved stone courses shall be repaired by the Contractor at own expense whether such damage results from Contractor's or subcontractors' operations, or from the action of wind, waves, tides or ice.
- .10 Place stones carefully and avoid damaging adjacent structures. In case of damage, all repair and/or replacement costs resulting from a lack of precaution shall be at Contractor's expense.
- .11 Placement using any method likely to cause segregation in a given category of stone is not authorised. Placement shall begin at the toe of the slope and proceed upward. Casting of stone or moving by drifting or manipulating down the slope is not permitted. Final slope and elevation are to be achieved as stones are placed.

- .2 Degradation/contamination of stone layers resulting from Contractor's operations.

### **3.3 DEFORMATION**

- .1 In case of deformation of any part of the work during construction or after construction but before acceptance, the Contractor shall remove the displaced materials and rebuild this portion of the structure using either new materials or the displaced materials if deemed appropriate.

- .2 Stone placement prior to the installation of the outer protection shall be at Contractor's own risk.

### 3.4 TOLERANCES

- .1 Surfaces obtained shall not deviate from the lines and grades indicated on the contract drawings in a range of plus or minus the tolerances indicated below. Tolerances are measured perpendicularly to the indicated neat lines.
- .2 Extreme limits of the tolerances given below shall not be continuous in any given direction over five (5) times the average dimension of a stone and/or over more than ten (10) square metres (m<sup>2</sup>) of structure surface area.
- .3 Any section of a stone course built to the upper tolerance limit shall not be in the immediate vicinity of a section built to the lower limit and vice-versa. In other words, transitions between tolerance limits shall be smooth.

| Material                                     | Above chart datum | Below chart datum |
|--|-------------------|-------------------|
| stone 8 to 12 tons                           | 50 cm             | 60 cm             |
| stone 1 to 3 tons and<br>stone 1 to 1.5 tons | 30 cm             | 40 cm             |

- .4 In addition to the above-indicated perpendicular tolerances with reference to the slope, the horizontal position of every break in grade of finished stone courses shall be less than 60 cm the indications on the contract drawings. This variation shall not be systematic in one way or the other. Lines, arcs and curves lines shall be continuous and smooth, without visible deflection, bends or kinks.
- .5 The above tolerances aim at ensuring that the work is constructed to the required heights, slopes and levels. Placed material that would not meet these requirements shall be removed or reworked as directed by the Departmental Representative.

### 3.5 CIRCULATION ON THE NORTH AND SOUTH BREAKWATER

- .1 Circulation on the breakwater is restricted by the width and the design of the structure. Construction of a temporary access road can be considered, but only if it done and removed in order to make sure that there will be no remaining contamination of the breakwater with unacceptable materials. In all cases, the construction method of such temporary access road will have to be approved by the Departmental Representative.

### 3.6 DEBRIS

- .1 Unless otherwise indicated by the Departmental Representative, all the timbers, the unsatisfactory materials and the debris within the construction zone shall be removed and become the Contractor's property. All the materials shall be disposed.

**3.7 TURBIDITY CONTROL**

- .1 The Contractor shall control stone placement in such way as to minimize water turbidity.

**END OF SECTION**



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Stabilization works of Whalen bridge's foundation

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|                | C16/16          | Boreholes reports and location plan  |

**LIST OF ANNEX:**

Annex A: Pictures

## **ANNEXE A**

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## Montage photographique

### CAP-DES-ROSIERS - Réfection du havre - R.044042.001

*Photos 1 à 6 - Exemple de perforation de la palplanche d'acier près du fond marin dans le secteur Sud-ouest du bassin*

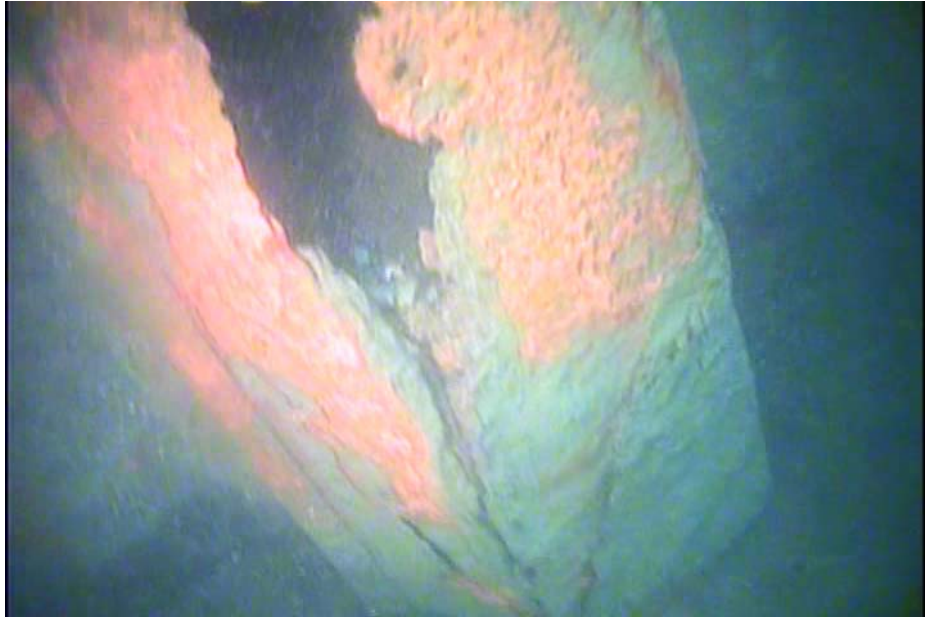


*Photo 1*



*Photo 2*





*Photo 3*



*Photo 4*





*Photo 5*



*Photo 6*



*Photo 7 - Pierre de calibre 8 à 12 t.m. (quantité 3200 t.m.) fournie par TPSGC. Elle est située près du havre.*



*Photo 8 - Pierre tout-venant fournie par TPSGC (quantité  $\pm 500$  t.m.). Elle est située près du quai Whalen.*





*Photo 9 - Pierre de calibre 300 à 450 mm (quantité 3420 t.m.) fournie par TPSGC. Elle est située le long de la route du littoral.*



*Photo 10 - Pierres de calibre 8 à 12 t.m. et 100 à 300 kg fournies par TPSGC. Elles sont situées dans la carrière d'Allen Dumaresq à Rivière-au-Renard.*