



Travaux publics et
Services gouvernementaux
Canada

Public Works and
Government Services
Canada

**COMPENSATION FOR THE LOSS OF WETLANDS AND
HABITATS IN A MIGRATORY BIRD SANCTUARY
ÎLES DE LA PAIX**

TECHNICAL SPECIFICATIONS

For Tender

PWGSC Ref.: R.071652.978

WSP Ref.: 171-11208-00

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WSP Canada Inc.

Quebec, March 18, 2019

Prepared By:

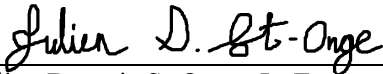
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REVISION

| Rev. | Date | Description |
|-------------|-------------|--------------------|
| 00 | 2018-09-25 | For Comments 75% |
| 01 | 2018-10-26 | For Comments 99% |
| 02 | 2018-12-03 | For Tender |
| 03 | 2018-03-18 | For Tender |

PWGSC R.071652.978
Compensation for the Loss of Wetlands and
Habitats in a Migratory Bird Sanctuary
Îles de la Paix

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Part 1 General

1.1 RELATED REQUIREMENTS

- .1 All sections included to the present specifications (see Section 00 10 10 – Table of Contents).

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- .1 Work of this Contract is related to the protection of Îles de la Paix, on the north shore of Île aux Plaines, facing the city of Léry, on Saint-Louis Lake. More specifically, the Compensation for the Loss of Wetlands and Habitats in a Migratory Bird Sanctuary Project comprises of: construction of two (2) breakwater strings near Île aux Plaines (one in the west sector [approx. 250 m] and another one in the east sector [approx. 430 m]), shore nourishment and creation of wetlands, as specified in the drawings and specifications. Appendix 1 presents site photos taken in November 2018 to help Bidders understand the context and characteristics of the work site.
- .2 The Project also comprises of all temporary structures and works for the execution of Work mentioned above. Temporary structures and works to include, but not limited to:
 - .1 Development of a stockpiling and transshipment area within the stone transshipment premises;
 - .2 Construction and maintenance of temporary jetties and accesses and site remedial. Transshipment of materials to the barge loading site, their transport (by boat) to the construction site, removal and disposal of excess material (on land);
 - .3 Provision and placement of all material required for execution of work;
 - .4 Provision of equipment and workforce required for full execution of work in a coastal environment;
 - .5 Mitigation measures for environmental protection, in accordance with drawings and specification requirements.
- .3 Work includes, but not limited to:
 - .1 Submit quality documents of the Environment Protection Plan and the Health and Safety Plan, work methods, Certificate of Compliance (stones, biodegradable oil, etc.). etc.;
 - .2 Site mobilization;
 - .3 Site preparation;
 - .4 Bathymetry and survey (land survey and photos) of site before work;
 - .5 Construction – East site;
 - .6 Acceptance of civil work – East site;
 - .7 Construction – West site;
 - .8 Acceptance of civil work – West site;
 - .9 Post-Work bathymetry and survey (land survey and photos);
 - .10 Landscape and planting;
 - .11 Acceptance of planting;

- .12 Stockpiling and transshipment site reclamation located within the stone transshipment premises;
- .13 Final acceptance of Work.

1.3 WORK SCHEDULE

- .1 Work must be carried out from Monday to Friday, between 7AM and 5PM, unless approved otherwise by Departmental Representative. Upon request to the Departmental Representative at least one (1) week ahead of time, Work could be authorized during certain weekends, or according to different schedule, depending on the grounds and justification for the request.
- .2 A security service is responsible of site access control from Monday to Friday between 7AM and 5PM, except on holidays, but including the construction holiday. If that service is required outside the above hours, the Contractor will assume the extra cost of a maximum of one hundred and fifty dollars (\$150) per day for week days and six hundred dollars (\$600) per day on the weekend.

1.4 CONTRACT TYPE

- .1 Construct Work under unit price and fixed price contract.
- .2 Materials for Work shall be transhipped at site located 61 Melocheville Boulevard, Beauharnois, owned by Groupe St-Pierre. Site rental fees for the expected duration of Work shall be paid by Canada for 2019 only.
- .3 Relations between Contractor and Groupe St-Pierre, subcontractor assigned by Canada, are as defined in Conditions of Contract. Responsibilities of Groupe St-Pierre are as follows:
 - .1 Reserve area on project site for stockpiling and transshipment ramp, as shown on drawings;
 - .2 Allow occasional access to the truck scale located on site along the access road;
 - .3 Provide control of accesses.

1.5 SCHEDULING AND TIME LIMIT

- .1 See Section 01 32 16.07 – Construction Progress Schedule – Bar (Gantt) Chart for details regarding Work progress schedule.

1.6 PRIME CONTRACTOR

- .1 By agreeing to this contract, the Contractor takes over the responsibilities for execution of Work that are normally given to the Principal Contractor (Prime Contractor), in accordance with the Occupational Health and Safety Act.

1.7 REGULATIONS AND PERMITS

- .1 National wildlife areas and migratory bird sanctuaries.
 - .1 Îles de la Paix is a National Wildlife Area and Migratory Bird Sanctuary owned by Environment and Climate Change Canada's Canadian Wildlife Service

(ECCC, CWS). Contractor to complete Work in accordance with Canada Wildlife Act and Migratory Birds Convention Act (1994).

- .2 Project execution must comply with the following acts, but not limited to:
 - .1 Migratory Birds Convention Act (1994), Migratory Birds Regulations and Migratory Bird Sanctuary Regulations;
 - .2 Canada Wildlife Act and Wildlife Area Regulations;
 - .3 Species at Risk Act;
 - .4 Canadian Environmental Assessment Act (CEAA, 2012);
 - .5 Fisheries Act (R.S.C., 1985, c. F-14);
 - .6 Navigation Protection Act (R.S.C., 1985, c. N-22);
 - .7 Environment Quality Act (EQA);
 - .8 Act Respecting the Conservation and Development of Wildlife (ARCDW).
- .3 Environment and Climate Change Canada (ECCC) is in charge of issuing permits for execution of Work. Two permits are required:
 - .1 Temporary permit subject to Canada Wildlife Act (R.S.C., 1985, c. W-9) and issued under Article 4 of Wildlife Area Regulations (C.R.C., c. 1609);
 - .2 Temporary permit subject to Migratory Birds Convention Act (S.C. 1994, c. 22) and issued under Article 9 of Migratory Bird Sanctuary Regulations (C.R.C., c. 1036).
- .4 Transport Canada is responsible for issuing authorizations regarding the development of new structures in navigable waters under the Navigation Protection Act.
- .5 Fisheries and Oceans Canada (DFO) is responsible for issuing authorizations required for the development of new structures in fish habitat under the Fisheries Act.
- .6 Ministère de l'Environnement et de la Lutte contre les changements climatiques (MELCC) is responsible for issuing certificates of authorization under Article 22 of the Environment Quality Act (EQA).
- .7 Ministère des Forêts, de la Faune et des Parcs (MFFP) is responsible for issuing certificates of authorization under Article 128.7 of the Act Respecting the Conservation and Development of Wildlife (ARCDW).
- .8 Owner is responsible for obtaining from Federal and Provincial Ministries the various permits, authorizations and approvals.
- .9 Contractor is responsible for obtaining any other permit or authorization (e.g. municipal or RCM).
- .10 All terms and conditions included in the various permits and authorizations must be complied with.

1.8 COMMUNICATIONS

- .1 Owner is responsible for official communications (media, organizations, ministries, etc.). Note that the Owner is Infrastructure Canada (INFC).
- .2 Contractor to forward requests for communication to Departmental Representative.

- .1 Contractor is responsible for making sure that all parties under its jurisdiction (workforce/subcontractor) forward requests for communication to the Departmental Representative.

1.9 CONTRACTOR USE OF PREMISES

- .1 Contractor may use construction site, within the designated areas, in conjunction with Departmental Representative and in accordance with requirements of this specification, until substantial completion of Work.
- .2 Contractor to be responsible for physically delineating areas reserved for Work.
- .3 Use of premises is restricted to areas required for execution of Work and access. Those areas, shown on sheet C202, are planned for transshipment, installation of construction site trailers and contractor areas (temporary storage, machinery, etc.). The use of premises must be coordinated as directed by Departmental Representative.
 - .1 Contractor to notify Departmental Representative of date of occupancy at least a month in advance.
- .4 Use of premises is restricted to areas shown on drawings and requirements of specification.
- .5 Coordinate use of premises as directed by Departmental Representative:
 - .1 If required, find and pay for additional work or storage areas required for execution of Work in accordance with terms and conditions of Contract.
- .6 Site access
 - .1 The transshipment site can be reached from Road 132 (Melocheville Boulevard) as indicated on sheet C202;
 - .2 The two (2) work areas on Îles de la Paix can be reached by boat from the transshipment site identified on sheet C202 and temporary accesses shown on sheet C201. Contractor is responsible for compliance with navigation codes throughout all duration of Work to reach projected work site.
- .7 Site reclamation
 - .1 It is the Contractor's responsibility to document state of premises, including transshipment site, lake bed at jetties and Île aux Plaines, and its shores, to Departmental Representative's satisfaction (land surveys, hydrographic surveys and photos) before work and return site to its original state;
 - .2 Once work finished, existing structures must be in state equivalent or greater than state before start of work;
 - .3 The Contractor must take all necessary measures to prevent damage to existing structures. Any damage will be repaired to the satisfaction of the Departmental Representative, at the expenses of the Contractor;
 - .4 When removing or modifying the existing structures, the Contractor must take all necessary measures to prevent damage to parts that are staying in place;
 - .5 The Contractor must repair or replace parts of the existing structures that were modified and/or damaged during the construction work as to allow connection to

- the existing structure or to an adjacent structure, or for harmonization, and in accordance with the Departmental Representative's instructions;
- .6 At completion of operations condition of existing work: equal to or better than that which existed before new work started.
- .8 Cutting of trees and shrubs and work boundaries:
- .1 Tree cutting or pruning is forbidden. Only trees or branches which interfere with structures to be constructed may be cut provided prior written approval by Departmental Representative;
- .2 The Contractor must adapt his work methods to machinery and equipment appropriate to site conditions and allocated work right-of-way boundaries. No traffic outside work right-of-way, as indicated on drawings (C201 and C202), at permanent structures (shore nourishment and breakwaters) will be tolerated. Contractor to provide in written to Departmental Representative for prior approval drawing showing all access roads and traffic areas required for work outside right-of-way of structures. Contractor shall only use approved accesses. No access corridor outside authorized (in written) right-of-ways and accesses will be tolerated;
- .3 For the purpose of Work, only pedestrian traffic shall be authorized on Île aux Plaines. The Contractor shall take all necessary measures to prevent damage to vegetation. Any damage to vegetation shall be rectified to the satisfaction of the Departmental Representative and at the Contractor's expense.
- .9 Storage and work areas:
- .1 Transshipment area (see sheet C202): Contractor to coordinate the use of premises with the Departmental Representative and restrict temporary storage and work area to area designated for Work, as specified on drawings. The Contractor can store his equipment, hardware, and material within the right-of-way in the work area in accordance with the applicable standards (delineation, distance from watercourse, signalization, access, margin, and safety space, etc.) as to allow at least alternate traffic at all times;
- .2 Work areas located near or on Île aux Plaines: Contractor to make sure Work complies with right-of-way limits at permanent structures (shore nourishment and breakwaters) specified on sheet C201 and specifications. Make sure Work does not overly encroach on the environment and comply with stated limits. Contractor to take necessary precautions to make sure temporary storage does not contaminate the surrounding environment and complies with Section 01 35 43 – Environmental Procedures;
- .3 The Contractor will be in charge of assessing the premises before Work and returning them to their original conditions supported by dated photos;
- .4 Obtain and pay for use of additional storage or work areas, outside sites specified by this Project and Îles de la Paix National Wildlife Area, found by the Contractor and needed for operations under this Contract.

1.10 EXISTING SERVICES

- .1 The Contractor must establish location and extent of existing public service lines in area of work before starting Work. Notify Departmental Representative of findings.

- .2 The Contractor must protect and sustain the existing public utilities, including, but not limited to: cables, underground concrete uncased “duct bank”, electrical and telephone poles. The Contractor shall be responsible for damage to existing structures and shall replace said structures at his own expense.
- .3 Contractor to anticipate the traffic of personnel and vehicles as to take into consideration public utilities to be protected or sustained.
- .4 Contractor to notify the Consultant and utility companies of intended interruption of services and obtain required permission.
- .5 Contractor to submit written schedule to and obtain approval of Departmental Representative for any shut-down or closure of active service or facility including power and communications power and communications services. Adhere to approved schedule and provide notice to affected parties.
- .6 Contractor to install, when required, appropriate bridging over trenches which cross sidewalks or roads to permit normal traffic.
- .7 Where unknown services are encountered, Contractor must immediately advise Departmental Representative and confirm findings in writing.
- .8 Contractor to protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.
- .9 Contractor to record locations of maintained, re-routed and abandoned service lines.
- .10 Contractor to provide temporary services/utilities as directed by Departmental Representative so that critical systems of other occupants are maintained.

1.11 CANADA FURNISHED ITEMS

- .1 Owner/Departmental Representative’s responsibilities:
 - .1 Provide transshipment area for the Project, as specified on drawings;
 - .2 Provide area for berth at the transshipment site;
 - .3 Allow occasional access to truck scale located on site along the access road to the transshipment site;
 - .4 Provide control of accesses.

1.12 CONTRACTOR FURNISHED ITEMS

- .1 Contractor’s responsibilities (but not limited to):
 - .1 Designate submittals and delivery schedule for each product in progress schedule;
 - .2 Review shop drawings, product data, samples, and other submittals. Submit to Departmental Representative notification of observed discrepancies or problems anticipated due to non-conformance with Contract Documents;
 - .3 Provide, receive and unload submittals on site;
 - .4 Inspect products at the source and deliveries jointly with Owner; record shortages, and damaged or defective items;
 - .5 Handle products at site;

- .6 Protect products from damage, and from exposure to elements;
- .7 Assemble, install, connect, adjust, and finish products;
- .8 Provide installation and placement inspections required by public authorities;
- .9 Repair or replace items damaged by Contractor or subcontractor on site (under his control);
- .10 Contractor to give access to site and floating equipment for Departmental Representative, PWGSC/PSPC, INFC and their visitors at all times;
- .11 Contractor to be responsible at all times of transport of Departmental Representative, PWGSC/PSPC, INFC's personnel, as well as their visitors, on the water for the duration of Work in hydrous environment;
- .12 Contractor to provide Departmental Representative with motorboat (rigid hull inflatable-type [RIB]) of 5.5 m or greater, including consumables and maintenance, for the entire duration of Work.

1.13 DOCUMENTS REQUIRED

- .1 The following documents must be submitted and approved by Departmental Representative at project kick-off meeting:
 - .1 Construction schedule, which shall include, but not be limited to:
 - .1 Milestones as specified in paragraph 1.5 "Project Milestones" in Section 01 32 16.07 – Construction Progress Schedule – Bar (Gantt) Chart;
 - .2 Contract Time for execution as per article 1.7 of Section 01 32 16.07;
 - .3 Compliance with requirements of Section 01 32 16.07 – Construction Progress Schedule – Bar (Gantt) Chart;
 - .4 Work restriction periods indicated in Section 01 35 43 – Environmental Procedures.
 - .2 Work methods for each activity;
 - .3 Health and Safety Plan;
 - .4 Environmental Protection Plan;
 - .5 Emergency plans;
 - .6 Reports attesting to the compliance of products as required for quality control.
- .2 Maintain at job site, one copy of each document as follows:
 - .1 Contract drawings and plans;
 - .2 Specifications;
 - .3 Addenda;
 - .4 Referenced shop drawings;
 - .5 List of non-referenced shop drawings;
 - .6 Change orders;
 - .7 Other modifications to contract;
 - .8 Field test reports;
 - .9 Copy of approved updated work schedule;
 - .10 Health and safety plan and other safety-related documents;

- .11 Site instructions;
- .12 Authorizations, approvals and permits issued for Work;
- .13 Other documents as specified.

Part 2 Products

2.1 PROVISION OF PRODUCTS AND MATERIALS

- .1 Refer to all specification sections.

Part 3 Execution

3.1 PLACEMENT OF MATERIALS

- .1 Refer to all specification sections.
- .2 Equipment with GPS systems allowing for accurate profiling shall be required for execution of Work and site remediation.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 PWGSC/Contractor Agreement.
- .2 01 77 00 – Closeout Procedures.
- .3 All sections of the specifications.

1.2 SCHEDULE OF VALUES

- .1 Provide schedule of values supported by evidence as Contractor may reasonably direct and when accepted by Departmental Representative, be used as basis for applications for payment.
- .2 Include statement based on schedule of values with each application for payment.

1.3 PRIORITIZATION

- .1 In case of contradiction or divergence in the methods of payment (measuring) between the present section and the other sections of the specifications, the present section (01 29 00) takes precedence.
- .2 Refer to administrative specifications for any administrative requirements or provisions.

1.4 INCLUSIONS AND GENERALITIES

- .1 The supply of goods, services and materials, labour including supervision, organization, tools, equipment, protection, transport, loading and unloading, customs charges, rental, administration and profits, financing, etc. required to complete the work of the present project (more specifically described in the items hereafter), unless otherwise noted.
- .2 Only the materials actually used in the structure and approved by PWGSC or Departmental Representative will be taken into account for measuring purposes.
- .3 Work must consider all requirements, provisions, details, performance results described in the Special Technical Specifications or presented in drawings, methodology, site-specific conditions, work period, physical constraints, existing soil bearing capacity, prohibitions, and hydrology, etc.

1.5 MEASUREMENT AND PAYMENT – ITEMS PRESENTED ON THE BID FORM

- .1 ENVIRONMENTAL MEASURES AND SITE ACCESS:
 - .1 **Site organization, mobilization/demobilization, environmental measures, site access/preparation/remedial, and overhead – Article 1.1:**
 - .1 The price of this item is a fixed fee including all expenses, overhead, direct or indirect cost of Contractee which are not implicitly covered, included, compiled or broke down in unit or fixed prices of other bid items. It can be used to compensate all costs incurred for installations required to carry out the Work;
 - .2 The price includes, without being limited to:

- .1 Coordination required by the Contractor with PWGSC and/or Departmental Representative;
- .2 Documents required for the signing of the contract (insurance certificates, guarantees, list of rates, list of subcontractors, licences, etc.);
- .3 The production and issue of documents regarding all aspects of construction, such as, but not limited to: permits, agreements, authorizations, health and safety plan, work schedule, detailed work methods certified by an engineer member of the Ordre des ingénieurs du Québec (OIQ), shop drawings, suppliers' product sheets and methods, test and analysis results, certificates of compliance, identification of borrow sources, material transport tickets, requests for payment, invoices, reports, surveys, as-built drawings, etc.;
- .4 Expenses stemming from administrative provisions, such as, but not limited to: project management and stewardship, clerical work, expert (project engineer), land surveyors, subcontracting management, office automation, telecommunications, IT services, preparation of tender, etc.;
- .5 All that is required in the following sections of the specifications, and which is not charged directly or indirectly with one of the various bid form items:
 - .1 01 11 00 – Summary of Work;
 - .2 01 31 19 – Project Meetings;
 - .3 01 32 16.07 – Construction Progress Schedule – Bar (Gantt) Chart;
 - .4 01 33 00 – Submittal Procedures;
 - .5 01 35 29.06 – Health and Safety Requirements;
 - .6 01 35 43 – Environmental Procedures;
 - .7 01 45 00 – Quality Control;
 - .8 01 52 00 – Construction Facilities;
 - .9 01 56 00 – Temporary Barriers and Enclosures;
 - .10 01 61 00 – Common Product Requirements;
 - .11 01 71 00 – Examination and Preparation;
 - .12 01 74 11 – Cleaning;
 - .13 01 74 21 – Construction/demolition Waste Management and Disposal;
 - .14 01 77 00 – Closeout Procedures;
 - .15 01 78 00 – Closeout Submittals;
 - .16 32 01 90.33 – Tree and Shrub Preservation.
- .3 Mobilization and demobilization of all heavy or power equipment, machinery, float trailers, trucks, delivery trucks, construction facilities, containers, fuel tanks, etc., other than equipment required for marine transportation (included in article 2.1 of bid form);

- .4 Transport and equipment for travel of employees and workforce between land and work site, as well as provisions for their stay for the day at work location, which could include Departmental Representative and other professionals;
- .5 Costs of surveying, bathymetric and topographic surveys, staking out the structures and other survey costs not included in any other item of the bid, including for measurement of quantities and for production of as-built drawings (sharing of data files and use of specialized equipment);
- .6 Costs of preparing and reviewing work plans and/or procedures in accordance with the specification requirements;
- .7 Various operating expenses, such as, but not limited to: workforce salaries, isolation allowance, benefits, indexation for foremen, construction shack rental (including maintenance, air conditioning, janitorial services and furniture rental), work site or space rental, compliance with deforested limits, the narrowness of certain work areas, etc. Specify projected machinery and equipment, work methods and procedures for all steps of storage (other than the stone transshipment site), preparation of site for construction facilities (site trailers), heavy equipment (fuel, hydrocarbons, maintenance, storage, GPS), rental of specialized equipment and tools, equipment and devices required for site and worker safety, sanitary facilities, provision and availability of environmental emergency kits, etc.;
- .8 Maintenance of work site, temporary structures, and access points;
- .9 Implementation of “secured” sites and of spill containment devices for fuelling or transshipment of fuel;
- .10 Costs for provision, maintenance and upkeep of a motorized watercraft and consumables to Departmental Representative;
- .11 Costs for services of a testing laboratory and for tests conducted, either at the source or on site, by said laboratory;
- .12 Energy costs and/or cost for generator units and connections;
- .13 Work site fencing, access barriers, signs, scaffolding and provisions for protection of existing structures, including plants to be kept on project site;
- .14 Snow removal, disposal and de-icing;
- .15 Maintenance and upkeep of roads used by heavy haul, such as road and site signs, use of signallers, temporary traffic lights and cleaning of streets and roads;
- .16 Environmental protection measures in accordance with requirements specified in Section 01 35 43 – Environmental Procedures (except measures for turbidity control which are included in article 1.2 of the bid form), including all equipment, provisions, special measures, action plans and personnel;
- .17 This item shall be paid as follows:
 - .1 25% at the first monthly payment conditional, however on work having started;

- .2 75% proportional to the progress of the work conducted within each period of measurement.
- .2 Turbidity control measures – Article 1.2:**
 - .1 A global price shall be paid for environmental measures regarding the control of turbidity. The price includes:
 - .1 All material, labour, and methods taken by the Contractor for compliance with environmental laws, standards and requirements for the control of suspended solids (SS);
 - .2 Implementation of measures, installation of turbidity curtains (maintenance during Work, dismantlement and removal), loading and transport of waste to authorized site, site reclamation, addition or repeat of measures as directed by Departmental Representative, as well as collection of samples and testing (analyses), in accordance with requirements and frequency directed by Departmental Representative.
 - .2 This item shall be paid as follows:
 - .1 20% at the first instalment payment, conditional on execution of work;
 - .2 80% proportional to the progress of the work conducted within each period of measurement.
- .3 Final cleaning and site remedial – Article 1.3:**
 - .1 A global price shall be paid for all activities required for cleaning and disposal of waste, as well as complete restoration of premises to their initial state to approval of Departmental Representative;
 - .2 Lump sum shall be paid in full at the end of Work.
- .2 EQUIPMENT AND TEMPORARY ACCESS JETTIES:**
 - .1 Marine equipment (barges and tugboats: mobilization/demobilization) – Article 2.1:**
 - .1 A global price shall be paid for this item. It includes all activities required for mobilization and demobilization of all marine equipment intended for transport of equipment, workforce and materials between the transshipment site and the project site;
 - .2 Price also includes, but not limited to: all transport (with or without escort), maneuvers for assembly and launching, special facilities, hull inspection or cleaning, and commissioning. Operations for the removal of the equipment at the end of work is also included. The use, if required, of mobile ramps for loading and unloading at construction and transshipment sites is also included.
 - .3 This item shall be paid as follows:
 - .1 50% of the lump sum at the first instalment payment, conditional on execution and completion of mobilization work;
 - .2 50% at the final payment, conditional on execution and completion of demobilization work.

- .2 Marine equipment (barges and tugboats: use) – Article 2.2:**
- .1 This item includes all activities required, as well as all expenses associated with the provision, rental, use and maintenance of the marine equipment meant for transport of equipment, workforce, and materials between the transshipment site and the project site;
 - .2 This item shall be paid at a unit price of week (or part of week) of transshipment activity basis within each measurement period.
 - .1 No additional payment shall be granted as allowance if, for any reason, Work happens to be delayed or extended;
 - .2 Thus, the additional use of marine equipment shall be included in the unit price of article 2.5 which covers a potential extension beyond chainings specified on drawings for each temporary jetty.
- .3 Handling and operation of marine equipment – Article 2.3:**
- .1 This item covers all activities required, as well as all expenses associated with the operation and maintenance of the marine equipment meant for transport of equipment, workforce and materials between the transshipment site and the project site.
 - .1 All operating (such as fuel) and maintenance expenses, as well as the salaries of personnel (captain, sailors and others) assigned to the task are included in the weekly rate;
 - .2 Equipment/machinery costs, as well as salaries of operators of such equipment assigned to the barge (trucks, power shovels, loader or others) included in other items are excluded from this item.
 - .2 This item shall be paid at a unit price of week (or part of the week) of transshipment activity basis within each measurement period.
 - .1 No additional payment shall be granted as allowance if, for any reason, Work happens to be delayed or extended;
 - .2 Thus, the additional use of marine equipment shall be included in the unit price of article 2.5 which covers a potential extension beyond chainings specified on drawings for each temporary jetty.
- .4 Temporary access jetties – Article 2.4:**
- .1 This item covers the provision, implementation, maintenance, removal and disposal to an authorized site of temporary jetties;
 - .2 The following assumptions are taken into account for the assessment of this item:
 - .1 The temporary jetty is defined as follows: temporary access jetty built at a crest elevation of at least 1,000 mm above the sea level (at all times). The jetty is located between the footprint limits of each breakwater string and a chainage to reach:
 - .1 The east jetty crest extends from chaining 6+000 to chainage 6+115;

- .2 The west jetty crest extends from chainage 5+000 to 5+255 chaining.
- .2 Jetties are constructed in accordance with dimensions planned by Contractor. They must comply with axes shown on drawings and not exceed authorized right-of-ways.
- .3 A lump sum shall be paid for this item:
 - .1 Bid price includes the cumulative amount for both jetties;
 - .2 Price includes design of structure by engineer member of the OIQ, provision of material, transport, machinery for construction and removal, including, but not limited to: loading at the borrow source, transport to the transshipment site, stockpiling, loading on barges, maneuvers on barges, unloading and construction of jetties, maintenance, upkeep and stability of jetties, ramps (landing piers) and safety devices on jetties (blocks, marine navigational aids, fences, and others), removal or destruction (to initial bathymetry in accordance with allowable limits), recycling, provision of supplementary volumes, construction of second jetty, final removal, loading on barges, unloading at transshipment site and transport of materials to authorized site;
 - .3 Price also includes work associated with jetty heightening (defined in article 1.5.2.4.3.2 above) required if water level should rise more than 300 mm from the start of access road construction work (for construction of breakwaters) to removal of the temporary jetty;
 - .4 Placement and removal of material must be carried out using excavator equipped with a RTK-DGPS system;
 - .5 If applicable, jetty's end devices (which facilitate transshipment maneuvers), their moving, or relocation are included in lump sum.
- .4 This item shall be paid as follows:
 - .1 25% of the lump sum for the development of each jetty (50% in total);
 - .2 25% of the lump sum for the maintenance, removal and disposal of all backfilled material at each of the jetties (50% in total).
- .5 **Temporary access jetties (extension/provisional amount) – Article 2.5:**
 - .1 The extension of the jetty is defined as follows: any extra length of jetty beyond the limit shown on drawings which would be required or mainly incurred due to lower water levels, or decreasing as work progresses, and which no longer allow access to the jetty with marine equipment.
 - .1 This item applies to any extra length constructed and removed from dictated axes, beyond chainings specified in article 1.5.2.4.2.1 (and positioned within authorized right-of-way limits);
 - .2 Note that this item shall only be admissible for a diminution greater than 300 mm, measured against operating water level,

- demanding the construction of the jetty in accordance with the length specified in item 2.4 of this bid form. Any extension of jetty beyond chainings specified on drawings without prior diminution greater than 300 mm shall be paid by Contractor;
- .3 The same provisions, activities, supplies, construction work as described in article 1.5.2.4. are included in this bid item;
 - .4 The extension of the “East” and “West” jetties is considered separately whether new material or material taken from another jetty or via the crest lowering of temporary jetties is used;
 - .5 Placement and removal of material must be carried out using excavator equipped with a RTK-DGPS system.
- .2 No material of this item can be used for maintenance purposes. If required, and made necessary by the extension of the jetty, costs associated with the removal, transport, moving and installation of any device at the end of the jetty as to facilitate mooring of barges (concrete blocks, mobile ramp, or others) must be covered by the lump sum in article 2.4 of the bid form;
 - .3 This item is “provisional”. It is possible that none of the work included in the item be required.
 - .1 Contractor to produce and have Departmental Representative accept supporting documents in the event that jetty extension work is required and accepted;
 - .2 Contractor and Departmental Representative to agree on a base measure based on the cost to linear meter ratio determined according to the lump sum in article 2.4 for operating conditions;
 - .3 Planned budget for this work is \$60,000.
 - .4 Payment to be made according the actual quantity executed within each period of measurement.
 - .1 Payment will only be released after placement, maintenance, removal and disposal is done. Amount to be solely paid in full;
 - .2 Only material accepted by Departmental Representative and included in the structure shall be considered.
- .3 **BREAKWATERS AND SHORE NOURISHMENT:**
 - .1 **Breakwater: Supply and installation of geotextile – Article 3.1:**
 - .1 This item covers all activities required for the provision, transport, transshipment, handling, temporary storage and placement within specified boundaries of geotextile indicated on drawings and specifications for establishment of breakwater foundations at Îles aux Plaines, whatever conditions encountered during installation;
 - .2 Item will be paid per square metre installed within geotextile limits shown on drawings in accordance with theoretical values.
 - .1 Price corresponds to the surface area covered. It does not take into account the required overlaps.

**.2 Breakwater: Provision and placement of 50-200 mm filter stones –
Article 3.2:**

- .1 This item includes all activities required for the purchase, provision, loading, transport, transshipment, handling, stockpiling, quality control and placement within specified limits of 50-200 mm filter stones (core of breakwaters);
- .2 Payable volume represents the volume which composes the underlayer and core of the breakwaters, as shown on drawings.
 - .1 Item will be paid per theoretical cubic metre within final limits of foundation as shown on drawings and in accordance with actual quantity placed within each period of measurement;
 - .2 Payable volume represents the difference between the theoretical constructed profile reached and the previously surveyed bathymetric profile.
 - .1 Contractor shall pay for both the survey conducted before start of work and the survey during work. These surveys shall be validated by Departmental Representative.
 - .3 Only material accepted by Departmental Representative and included in the structure shall be considered.
- .3 An excess volume of 50-200 mm stones can be temporarily placed in the breakwaters right-of-way to form a temporary access road necessary for the construction of the breakwaters. The excess 50-200 mm volume transported and placed for the temporary access roads is not paid as temporary work.
 - .1 The excess volume can be recycled as shore nourishment, in which case, its cost shall be covered by article 3.4, whatever the number of handling maneuvers required;
 - .2 All costs for excess volumes temporarily placed which must be removed from site must be paid by the Contractor.

**.3 Breakwater: Provision and placement of 700-900 mm armour stones –
Article 3.3:**

- .1 This item includes all activities required for the purchase, provision, loading, transport, transshipment, handling, stockpiling, quality control and placement within prescribed limits of 700-900 mm armour stones for construction of breakwaters;
- .2 This item is paid per metric ton by compiling scale tickets issued by the Weigh Station Manager (scale) for each truck load and received on site by the Departmental Representative.
 - .1 Payment corresponds to the compiled tonnage of materials placed for each period of measurement, and validated via land surveying conducted and paid by Contractor;
 - .2 Only material accepted by Departmental Representative and included in the structure within limits shown on drawings shall

be considered. Rejected stones which are not included in the structure shall be deducted.

.4 **Shore nourishment: Provision and placement of 50-200 mm angular stones – Article 3.4:**

- .1 This item includes all activities required for the purchase, provision, loading, transport, transshipment, handling, stockpiling, quality control, construction, maintenance and removal of the various temporary structures at breakwater, final placement within shore limits and in accordance with construction profile shown on drawings of 50-200 mm angular stones to final profile of shore nourishment.
 - .1 Materials used must comply with requirements on drawings and specifications;
 - .2 The majority of material used is subjected to several handling operations, including for the construction, maintenance and removal of temporary access roads developed within the breakwater right-of-way or for access to the shore. The material is then recycled as shore nourishment;
 - .3 This item also includes all handling operations and additional activities, including recovery of material volumes from temporary access roads.
 - .1 Placement and removal of material must be carried out using excavator equipped with a RTK-DGPS system.
- .2 Item will be paid per cubic metre measured on site via land surveying within final limits of development as shown on drawings.
 - .1 Payable volume represents the difference between the constructed profile and the previously surveyed profile.
 - .1 Contractor shall pay for both the survey conducted before start of work and the survey during work. These surveys shall be validated by Departmental Representative.
 - .2 Payment to be made according the actual quantity executed within each period of measurement. Only material actually included in the structure and accepted by Departmental Representative shall be considered. All costs for excess volumes temporarily placed which must be removed from site must be paid by the Contractor.

.5 **Shore nourishment: Provision and placement of 50-200 mm alluvial stones – Article 3.5:**

- .1 This item includes all activities required for purchase, provision, loading, transport, transshipment, handling, stockpiling, quality control and placement within limits and in accordance with construction profile shown on drawings of 50-200 mm alluvial stones to final profile of shore nourishment.
 - .1 Materials used must comply with requirements on drawings and specifications;

- .2 Spreading in thin layers must comply with applicable provisions.
- .2 Item will be paid per cubic metre measured on site via land surveying within final limits of development as shown on drawings.
 - .1 Payable volume represents the difference between the constructed profile and the underlying 50-200 mm angular stone profile.
 - .1 Surveys to be at Contractor's cost and validated by Departmental Representative.
 - .2 Payment to be made according the actual quantity executed within each period of measurement. Only material actually included in the structure and accepted by Departmental Representative shall be considered. All costs for excess volumes temporarily placed which must be removed from site must be paid by the Contractor.
- .4 **COMPENSATION WORK:**
 - .1 **Bolboschoenus fluviatilis (seacoat bulrush), multicell 72-70 ml – Article 4.1:**
 - .1 This item is paid per unit installed within grass bed boundaries specified on drawings or in accordance with areas to be developed on site as directed by Departmental Representative;
 - .2 This item includes all work required for provision, transport, transshipment, handling, protection, and placement within specified boundaries of plants or accessories for the perfect execution of work to develop grass beds at Îles aux Plaines. The price also includes plant upkeep throughout the one (1) year warranty period.
 - .2 **Vallisneria americana (tapegrass), multicell 72-70 ml – Article 4.2:**
 - .1 This item is paid per unit installed within grass bed boundaries specified on drawings or in accordance with areas to be developed on site as directed by Departmental Representative;
 - .2 This item includes all work required for provision, transport, transshipment, handling, protection, and placement within specified boundaries of plants or accessories for the perfect execution of work to develop grass beds at Îles aux Plaines. The price also includes plant upkeep throughout the one (1) year warranty period.
 - .3 **Salix interior (sandbar willow), multicell 15-320 cc, height: 20-30 cm – Article 4.3:**
 - .1 This item is paid per unit installed within shrub swamp boundaries specified on drawings or in accordance with areas to be developed on site as directed by Departmental Representative;
 - .2 This item includes all work required for provision, transport, handling, protection, and placement within specified boundaries of plants or accessories for the perfect execution of work to develop grass beds at Îles aux Plaines. The price also includes plant upkeep throughout the one (1) year warranty period.
 - .4 **Alnus incana subs rugosa (grey alder), container #2, height: 50-60 cm – Article 4.4:**

- .1 This item is paid per unit installed within shrub swamp boundaries specified on drawings or in accordance with areas to be developed on site as directed by Departmental Representative;
 - .2 This item includes all work required for provision, transport, transshipment, handling, protection, and placement within specified boundaries of plants or accessories for the perfect execution of work to develop grass beds at Îles aux Plaines. The price also includes plant upkeep throughout the one (1) year warranty period.
- .5 Cornus sericea (red-osier dogwood), multicell 15-320 cc, height: 30-40 cm – Article 4.5:**
- .1 This item is paid per unit installed within grass bed boundaries specified on drawings or in accordance with areas to be developed on site as directed by Departmental Representative;
 - .2 This item includes all work required for provision, transport, transshipment, handling, protection, and placement within specified boundaries of plants or accessories for the perfect execution of work to develop shrub swamps at Îles aux Plaines. The price also includes plant upkeep throughout the one (1) year warranty period.
- .6 Cornus sericea (red-osier dogwood), container #1, height: 30-40 cm – Article 4.6:**
- .1 This item is paid per unit installed within treed swamp boundaries specified on drawings or in accordance with areas to be developed on site as directed by Departmental Representative;
 - .2 This item includes all work required for provision, transport, transshipment, handling, protection, and placement within specified boundaries of plants or accessories for the perfect execution of work to develop shrub swamps at Îles aux Plaines. The price also includes plant upkeep throughout the one (1) year warranty period.
- .7 Acer saccharinum (silver maple), container #7, height: 150 cm – Article 4.7:**
- .1 This item is paid per unit installed within treed swamp boundaries specified on drawings or in accordance with areas to be developed on site as directed by Departmental Representative;
 - .2 This item includes all work required for provision, transport, transshipment, handling, protection, and placement within specified boundaries of plants or accessories for the perfect execution of work to develop treed swamps at Îles aux Plaines. The price also includes plant upkeep throughout the one (1) year warranty period.
- .8 Salix nigra (black widow), container #7, height: 150 cm – Article 4.8:**
- .1 This item is paid per unit installed within treed swamp boundaries specified on drawings or in accordance with areas to be developed on site as directed by Departmental Representative;
 - .2 This item includes all work required for provision, transport, transshipment, handling, protection, and placement within specified boundaries of plants or accessories for the perfect execution of work to develop treed swamps at Îles aux Plaines. The price also includes:

- .1 Provision of requested information;
 - .2 Plant upkeep throughout the one (1) year warranty period.
- .9 Cephalantus occidentalis (common buttonbush), container #2, height: 50-60 cm – Article 4.9:**
- .1 This item is paid per unit installed within treed swamp boundaries specified on drawings or in accordance with areas to be developed on site as directed by Departmental Representative;
 - .2 This item includes all work required for provision, transport, transshipment, handling, protection, and placement within specified boundaries of plants or accessories for the perfect execution of work to develop treed swamps at Îles aux Plaines. The price also includes plant upkeep throughout the one (1) year warranty period.
- .10 Populus deltoides (eastern cottonwood), container #3, height: 70-80 cm – Article 4.10:**
- .1 This item is paid per unit installed within treed swamp boundaries specified on drawings or in accordance with areas to be developed on site as directed by Departmental Representative;
 - .2 This item includes all work required for provision, transport, transshipment, handling, protection, and placement within specified boundaries of plants or accessories for the perfect execution of work to develop treed swamps at Îles aux Plaines. The price also includes plant upkeep throughout the one (1) year warranty period.
- .11 Salix nigra (black widow), container #3, height: 70-80 cm – Article 4.11:**
- .1 This item is paid per unit installed within treed swamp boundaries specified on drawings or in accordance with areas to be developed on site as directed by Departmental Representative;
 - .2 This item includes all work required for provision, transport, transshipment, handling, protection, and placement within specified boundaries of plants or accessories for the perfect execution of work to develop treed swamps at Îles aux Plaines. The price also includes plant upkeep throughout the one (1) year warranty period.
- .12 Manual Seeding – Article 4.12:**
- .1 This item is paid per unit installed within treed swamp boundaries specified on drawings or in accordance with areas to be developed on site as directed by Departmental Representative;
 - .2 This item includes all work required for provision, transport, transshipment, handling, protection, and placement within specified boundaries of plants or accessories for the perfect execution of work to develop treed swamps at Îles aux Plaines. The price also includes plant upkeep throughout the one (1) year warranty period.
- .13 Wildlife structures – nest boxes – Article 4.13:**
- .1 This item is paid per unit installed;
 - .2 This item includes all work required for provision, transport, transshipment, handling, protection, and placement at locations approved

beforehand by Departmental Representative in accordance with requirements of contract documents;

- .3 The price also includes, without being limited to:
 - .1 Provision of requested information;
 - .2 Machinery and equipment required for suitable installation of nest boxes;
 - .3 Provision and placement of all components required for installation (treated lumber pieces, wire mesh, hardware, etc.).

.14 Wildlife structures – platforms – Article 4.14:

- .1 This item is paid per unit installed;
- .2 This item includes all work required for provision, transport, transshipment, handling, protection, and placement at locations approved beforehand by Departmental Representative in accordance with requirements of contract documents;
- .3 The price also includes, without being limited to:
 - .1 Provision of requested information;
 - .2 Machinery and equipment required for suitable installation of platforms;
 - .3 Provision and placement of all components required for installation (pole and treated lumber pieces, hardware, etc.).

| | |
|---------------|-----------------|
| Part 2 | Product |
| 2.1 | NOT USED |
| .1 | Not used. |

| | |
|---------------|------------------|
| Part 3 | Execution |
| 3.1 | NOT USED |
| .1 | Not used. |

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Contractor is responsible for execution of various tests as part of his Quality Control, in accordance with sections 01 45 00 – Quality Control and 35 31 19 – Revetments, of this specification.
- .2 Particular requirements for inspection and testing that may be carried out by testing laboratory designated by Departmental Representative, as part of Quality Assurance of work and material, are specified in sections 35 31 19 – Revetments, 01 35 43 – Environmental Procedures, and 32 93 10 – Trees, Shrubs and Ground Cover Planting, of this specification.

1.2 APPOINTMENT AND PAYMENT

- .1 Departmental Representative will not be responsible for Quality Control. Contractor to be solely responsible for Quality Control.
- .2 As part of Quality Assurance, Departmental Representative will appoint and pay for services of testing laboratory except follows:
 - .1 Inspection and testing under responsibility of Contractor in accordance with sections 35 31 19 – Revetments, 01 35 43 – Environmental Procedures, and 32 93 10 – Trees, Shrubs and Ground Cover Planting;
 - .2 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities;
 - .3 Inspection and testing performed exclusively for Contractor's convenience;
 - .4 Mill tests and certificates of compliance;
 - .5 Tests specified to be carried out by Contractor under supervision of Departmental Representative.
- .3 Where tests or inspections by designated testing laboratory reveal Work not in accordance with contract requirements, pay costs for additional tests or inspections as required by Departmental Representative to verify acceptability of corrected work.

1.3 CONTRACTOR'S RESPONSIBILITIES

- .1 Provide labour, equipment and facilities to:
 - .1 Provide access to Work for inspection and testing;
 - .2 Facilitate inspections and tests;
 - .3 Make good Work disturbed by inspection and test;
 - .4 Provide storage on site for laboratory's exclusive use to store equipment and cure test samples.
- .2 Notify Departmental Representative forty-eight (48) hours minimum sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test.

- .3 Where materials are specified to be tested, allow collection or, upon request by Departmental Representative, deliver representative samples in required quantity to testing laboratory.
- .4 Pay costs for uncovering and making good Work that is covered before required inspection or testing is completed and approved by Departmental Representative.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

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

1.2 PRICE AND TERMS OF PAYMENT

- .1 Expenses incurred for project meetings must be included in the tender price for each relevant payment item of the bid form.

1.3 ADMINISTRATIVE

- .1 Schedule and administer biweekly project meetings throughout the progress of the Work.
- .2 Departmental Representative shall prepare the agenda of each meeting.
- .3 Departmental Representative shall distribute written notice of each meeting four (4) days in advance of meeting date to Contractor, Infrastructure Canada, PWGSC and Design Engineer.
- .4 Provide physical space and make arrangements for meetings.
- .5 Departmental Representative shall preside meetings.
- .6 Departmental Representative shall record the minutes of the meeting, include significant proceedings and decisions, identify actions by parties and follow-up to be carried out.
- .7 Departmental Representative shall reproduce and distribute copies of minutes within five (5) working days after meeting and transmit to meeting participants and affected parties not in attendance.
- .8 Representatives of Contractor, Subcontractor and suppliers attending meetings must be qualified and authorized to act on behalf of each party represented.
- .9 Frequency of meetings may be increased if deemed necessary by Departmental Representative.

1.4 PRECONSTRUCTION MEETING

- .1 Within fifteen (15) days after award of Contract, the Departmental Representative shall request a kick-off meeting to update the following, but not limited to: work characteristics, challenges and issues, administrative procedures and responsibilities, as well as roles and responsibilities of each stakeholder, including their contact information and the lines of communication to conform to.
- .2 Departmental Representative, PWGSC, Infrastructure Canada, Consultant, Contractor and major Subcontractors will be in attendance.
- .3 Departmental Representative shall establish time and location of meeting and notify parties concerned at least five (5) working days before meeting.
- .4 Visit of sites shall be conducted before meeting. Contractor to ensure transport of people on the water between the various locations.

- .5 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.
- .6 Kick-off meeting agenda to include, without being limited to:
 - .1 Appointment of official representatives of participants in the Work;
 - .2 Schedule of Work in accordance with Section 01 32 16.07 – Construction Progress Schedules – Bar (GANTT) Chart;
 - .3 Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00 – Submittal Procedures;
 - .4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, and fences in accordance with Section 01 52 00 – Construction Facilities;
 - .5 Delivery schedule of specified equipment in accordance with the following sections:
 - .1 01 56 00 – Temporary Barriers and Enclosures;
 - .2 32 91 19.13 – Topsoil Placement and Grading;
 - .3 32 92 19.13 – Mechanical Seeding;
 - .4 32 93 10 – Trees, Shrubs and Ground Cover Planting;
 - .5 35 31 19 – Revetments.
 - .6 Site security in accordance with Sections 01 35 29.06 – Health and Safety Requirements and 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 Record drawings in accordance with Section 01 33 00 – Submittal Procedures;
 - .9 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 – Closeout Submittals;
 - .10 Monthly progress claims, administrative procedures, photographs, hold backs;
 - .11 Appointment of inspection and testing agencies or firms;
 - .12 Insurances, transcript of policies.

1.5 PROGRESS MEETINGS

- .1 During the course of Work, Departmental Representative shall schedule biweekly progress meetings.
- .2 Contractor, major Subcontractors involved in Work, as well as Departmental Representative, PWGSC, Infrastructure Canada Representative and Consultant are to be in attendance.
- .3 Departmental Representative shall notify parties at least five (5) days in advance.
- .4 Departmental Representative shall record minutes of meetings and transmit to attending parties and affected parties not in attendance within five (5) days following the meeting.
- .5 Agenda of progress meetings to include the following, without being limited to:
 - .1 Review, approval of minutes of previous meeting;
 - .2 Health and safety;
 - .3 Environmental protection;

- .4 Review of Work progress since previous meeting;
- .5 Field observations, problems, conflicts;
- .6 Problems which impede construction schedule;
- .7 Review of off-site fabrication delivery schedules;
- .8 Corrective measures and procedures to regain projected schedule;
- .9 Revision of Work progress schedule;
- .10 Progress schedule, during succeeding work period;
- .11 Review submittal schedules: expedite as required;
- .12 Maintenance of quality standards;
- .13 Review proposed changes for affect on constructions schedule and on completion data;
- .14 Dispute;
- .15 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 REQUIREMENTS

- .1 01 11 00 – Summary of Work.
- .2 01 31 19 – Project Meetings.
- .3 01 35 43 – Environmental Procedures.

1.2 DEFINITIONS

- .1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.
- .2 Bar Chart (GANTT Chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity duration is shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.
- .3 Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes, used as a basis for work progress.
- .4 Baseline schedule: approved work schedule setting the detailed scheduling of all tasks (duration) and milestones within the timeframe and used to identify progress of Work.
- .5 Construction Work Week: Monday to Friday, inclusive, will provide five-day workweek and define schedule calendar working days as part of Bar (GANTT) Chart submission.
- .6 Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.
- .7 Master Plan: summary-level schedule that identifies major activities and key milestones.
- .8 Milestone: occasional event in project, usually completion of major deliverable; represents an obligation or deadline in progress of Work.
- .9 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision-making throughout project life cycle.

1.3 REQUIREMENTS

- .1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.
- .2 Schedule to complete Work in accordance with prescribed milestones and time frame as specified in subsection 1.5.

- .1 Construction progress schedule to consider, but not limited to, the restriction period for work in watercourse as well as deadlines specified in this Section and in Sections 01 11 00 – Summary of Work and 01 35 43 – Environmental Procedures.
- .3 Ensure that it is understood that Award of Contract, off-site preparation work, time of beginning (near or on Île aux Plaines), rate of progress, compliance with Contractor-approved schedule of activity, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.
- .4 Should Contractor be responsible for delay in announcement of the Substantial Completion of Work, Contractor to be responsible for:
 - .1 Ensuring access to river and associated expenses since Canada will assume those costs only up to the scheduled date of Substantial Completion of Work;
 - .2 Undertaking actions with any relevant party to obtain the required authorizations and permits extensions from authorities (Federal and Provincial authorizations and permits, arrangements with transshipment site Owner), so that authorizations are valid until final completion of Work. If a party should refuse to directly negotiate with the Contractor, Contractor to assume costs associated with actions to be taken by the Owner with any relevant organization and be responsible for possible resulting delays to obtain required authorizations and permit extensions from Federal and Provincial authorities so that such documents are valid until final completion of Work;
 - .3 Note that costs incurred in regard to delay in completion, and those related to provision CG5.10, can be entered in section “Allocation of Expenses and Damage” of the Certificate of Completion upon receipt of Final Certificate of Completion.

1.4 SUBMITTALS

- .1 Submit to Departmental Representative within five (5) working days of Award of Contract the construction progress schedule presented as a Bar (GANTT) Chart, which once accepted by Departmental Representative, will be used as sole baseline schedule for planning and monitoring of Work, and for the preparation of progress reports. This schedule must cover the entire planning of work specified in Article 1.2 of Section 01 11 00 – Summary of Work.

1.5 PROJECT MILESTONES

- .1 Project milestones form interim targets for Project Schedule.
- .2 Project mandatory milestones are:
 - .1 At contract award date, immediately start administrative tasks, required products order and subcontract attribution;
 - .2 Substantial Completion Certificate for the East Site must be obtained at the latest on October 31, 2019;
 - .3 Final Completion Certificate will be delivered after satisfactory completion of all Work including plantation warranty follow-up.

- .3 Restrictions on Works:
 - .1 The time frame provided to the Contractor to perform all in-water and Île aux Plaines works as per plans and obtain Substantial Completion Certificate is 109 weeks;
 - .2 Construction of jetties shall not start before June 3rd on the East jetty and July 17th on the West jetty;
 - .3 Access to transshipment site will be permitted from May 1st.

1.6 MASTER PLAN

- .1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).
- .2 Departmental Representative will review and return revised schedules within five (5) working days.
- .3 Revise impractical schedule and resubmit within five (5) working days.
 - .1 Schedule must be approved by Departmental Representative.
- .4 Accepted revised schedule will become official Master Plan (baseline schedule) and be used as baseline for work progress monitoring.
- .5 Under no circumstances request for revision of work schedule and delays may lead to modification of projected Work completion date.

1.7 PROJECT SCHEDULE

- .1 Develop detailed Project Schedule derived from Master Plan.
- .2 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:
 - .1 Preliminary work:
 - .1 Award;
 - .2 Preparatory documents:
 - .1 Shop drawings and samples;
 - .2 Work Plan, Environment Protection Plan, Sign Plan, Emergency Plan, etc. required prior to commencement of Work;
 - .3 Health and Safety Plan;
 - .4 Submittal of quality documents and others (procurement of Certificates of Compliance and others, such as stone, biodegradable oil, etc.);
 - .5 Permit and authorization.
 - .3 Kick-off meeting;
 - .4 Mobilization;
 - .5 Land surveying: bathymetry, establishment of centrelines, planting limits and others, in accordance with construction requirements of structures.
 - .2 Construction activities:

- .1 Mobilization – transshipment site:
 - .1 Equipment mobilization;
 - .2 Work site preparation;
 - .3 Transshipment site preparation;
 - .4 Procurement of stones for jetty;
 - .5 Procurement of filter stones;
 - .6 Procurement of armour stones;
 - .7 Procurement of stones for shore nourishment;
 - .8 Procurement of alluvial stones.
- .2 Construction – East sector (breakwaters and shore nourishment):
 - .1 Construction of jetty and work area;
 - .2 Construction of breakwater through detailed steps;
 - .3 Shore nourishment profiling through detailed steps;
 - .4 Removal of accesses and jetty; restoration of right-of-ways.
- .3 Civil work acceptance – East sector:
 - .1 Interim acceptance;
 - .2 Final cleaning.
- .4 Construction – West sector (breakwaters and shore nourishment):
 - .1 Construction of jetty and work area;
 - .2 Construction of breakwater through detailed steps;
 - .3 Shore nourishment profiling through detailed steps;
 - .4 Removal of accesses and jetty; restoration of right-of-ways;
 - .5 Transshipment and disposal of material.
- .5 Civil work acceptance – West sector:
 - .1 Interim acceptance;
 - .2 Final cleaning;
 - .3 Demobilization.
- .6 Transshipment site restoration acceptance.
- .7 Landscaping and planting:
 - .1 Transshipment of equipment;
 - .2 Transshipment of vegetation and material on the island;
 - .3 Planting of grass beds;
 - .4 Planting of shrub swamps (in shore nourishment areas);
 - .5 Planting of shrub swamps (on the island);
 - .6 Planting of treed swamps;
 - .7 Installation of nest boxes and platforms.
- .8 Planting work acceptance:
 - .1 Interim acceptance;
 - .2 Final cleaning;

- .3 Demobilization.
- .9 Substantial Completion of Work;
- .10 Warranty period follow-up;
- .11 Final Completion of Work.

1.8 PROJECT SCHEDULE REPORTING

- .1 Update Project Schedule biweekly as to reflect activity changes, progress and completions, as well as activities in progress.
- .2 Highlight implemented catch-up measures in Project Schedule when delay with respect to baseline schedule is noticed.
- .3 Updated construction schedule must be handed to Departmental Representative and participants biweekly at least 24 hours before project meetings.
- .4 Frequency of Project Schedule update may be increased if deemed necessary by Departmental Representative.

1.9 PROJECT MEETINGS

- .1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start, progress or completion dates later than dates indicated in baseline schedule approved at start of Project.
- .2 Weather-related delays with their remedial measures will be discussed and negotiated. Contractor to plan for delay in schedule caused by adverse weather conditions as to meet Work end date.

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 01 29 00 – Payment Procedures.
- .2 01 32 16.07 – Construction Progress Schedule – Bar (Gantt) Chart.
- .3 01 35 29.06 – Health and Safety Requirements.
- .4 01 35 43 – Environmental Procedures.
- .5 01 45 00 – Quality Control.
- .6 01 52 00 – Construction Facilities.
- .7 01 56 00 – Temporary Barriers and Enclosures.
- .8 01 78 00 – Closeout Submittals.
- .9 31 23 33.01 – Excavating, Trenching and Backfilling.
- .10 31 32 19.16 – Geotextile Soil Stabilization.
- .11 32 92 19.13 – Mechanical Seeding.
- .12 32 93 10 – Trees, Shrubs, and Ground Cover Planting.
- .13 35 31 19 – Revetments.
- .14 Any other sections requesting documents submittal.

1.2 REFERENCES

- .1 Canadian Labour Code, Part II, Canada Occupational Health and Safety Regulations.
- .2 Province of Quebec:
 - .1 An Act Respecting Occupational Health and Safety, L.R.Q., c. S-2.1 (current edition);
 - .2 Safety Code for the Construction Industry, L.R.Q., c. S-2.1, r.4.
- .3 Health Canada: Workplace Hazardous Materials Information System (WHMIS, 2015).
- .4 Bureau de normalisation du Québec (BNQ) (latest edition):
 - .1 CAN/BNQ 2501-255: Soils – Determination of the Water-Density Relation - Modified Effort Compaction Test (2,700 kN.m/m³).
- .5 Ministère des Transports du Québec (MTQ):
 - .1 Cahier des charges et devis généraux du Québec - Infrastructures routières, Construction et réparation (latest edition);
 - .2 Cahiers des normes, Ouvrages routiers, Tome VII « Matériaux » (latest editions):
 - .1 Norme 2101 – Granulats;

- .2 Norme 2103 - Matériaux granulaires pour coussin, enrobement, couche anti-contaminante et couche filtrante.
- .3 Cahiers des normes, Ouvrages routiers, Tome II « Construction routière » (latest editions);
- .4 Cahier des charges et devis généraux du ministère des Transports du Québec (CCDG), (latest edition).
- .6 American Society for Testing and Materials International (ASTM):
 - .1 ASTM C117 – 13, Standard Test Method for Materials Finer than 75- μ m (No. 200) Sieve in Mineral Aggregates by Washing;
 - .2 ASTM C 136-05, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates;
 - .3 ASTM D422-63(2007)e2, Standard Test Method for Particle-Size Analysis;
 - .4 ASTM D698-12e2, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³));
 - .5 ASTM D1557-12e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³));
 - .6 ASTM D4318-10e1, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils;
 - .7 ASTM C127-12, Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate;
 - .8 ASTM D6928-10, Standard Test Method for resistance Coarse Aggregate to Degradation in the Micro-Deval apparatus.
- .7 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series;
 - .2 CAN/CGSB-8.2-88, Sieves, Testing, Woven Wire, Metric.

1.3 ADMINISTRATIVE

- .1 Submit to Departmental Representative submittals listed for review. Submit promptly and in orderly sequence not to 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 and approved by Departmental Representative.
- .3 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .4 Where items or information is not produced or given in SI Metric, units converted values are acceptable.
- .5 Review submittals prior to submission to Departmental Representative. This review represents that 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 will be considered rejected.

- .6 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .7 Verify field measurements and affected adjacent Work are co-ordinated.
- .8 Contractor's responsibility for submission of materials and products in compliance with Contract Documents requirements is not relieved by Departmental Representative's review of submittals.
- .9 Keep one reviewed copy of each submission on site.

1.4 SHOP DRAWINGS AND PRODUCT DATA

- .1 The term “shop drawings” means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 Submit drawings stamped and signed by a professional engineer registered in “Ordre des Ingénieurs du Québec (OIQ)”.
- .3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to drawings.
- .4 Allow seven (7) working days for Departmental Representative's review of each submission.
- .5 Adjustments made to shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .6 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
- .7 Accompany submissions with transmittal letter, containing:
 - .1 Date;
 - .2 Project title and number;
 - .3 Contractor's name and address;
 - .4 Identification and quantity of each shop drawing, product data and samples;
 - .5 Other pertinent data.
- .8 Submissions include:
 - .1 Date and revision dates;
 - .2 Project title and number;
 - .3 Name and address of:

- .1 Subcontractor;
- .2 Supplier;
- .3 Manufacturer.
- .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents;
- .5 Details of appropriate portions of Work as applicable:
 - .1 Fabrication;
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances;
 - .3 Setting or erection details;
 - .4 Performance characteristics;
 - .5 Standards;
 - .6 Relationship to adjacent work.
- .9 After Departmental Representative's review, distribute copies.
- .10 Submit one (1) electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.
- .11 Submit one (1) electronic copy of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.
- .12 Submit one (1) electronic copy of test reports for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accordance with specified requirements;
 - .2 Testing must have been within three (3) years of date of contract award for project.
- .13 Submit one (1) electronic copy of certificates for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements;
 - .2 Certificates must be dated after award of project contract complete with project name.
- .14 Submit one (1) electronic copy of manufacturer's instructions for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.
- .15 Delete information not applicable to project.

- .16 Supplement standard information to provide details applicable to project.
- .17 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.
- .18 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 Parks Canada Agency approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents;
 - .2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

1.5 SAMPLES

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

1.6 CERTIFICATES AND TRANSCRIPTS

- .1 Immediately after award of Contract, submit the relevant documents required by the "Commission des normes, de l'équité, de la santé et de la sécurité du travail" (CNESST).
- .2 Submit transcription of insurance immediately after award of Contract.

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 01 11 00 – Summary of Work.
- .2 01 31 19 – Project Meetings.
- .3 01 33 00 – Submittal Procedures.
- .4 01 56 00 – Temporary Barriers and Enclosures.
- .5 Any other section requesting documents submittal.

1.2 REFERENCES

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.
- .2 Province of Quebec
 - .1 An Act Respecting Occupational Health and Safety, R.S.Q., c.S-2.1 (current edition);
 - .2 Safety Code for the Construction Industry, R.S.Q., c. S-2.1, r.4.
- .3 Health Canada: Workplace Hazardous Materials Information System (WHMIS, 2015).

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Contractor to conduct the following prior to commencement of Work:
 - .1 Provide Departmental Representative with Safe Work Plan and recent Mechanical Inspection Certificate (two [2] weeks or less) for each piece of equipment (machinery) used on site;
 - .2 Certification issued by Transport Canada and registration of all marine equipment;
 - .3 Make sure that workers on site received the required training and information to conduct Work in a safe manner. Make sure that required protective equipment and tools are available, inspected and comply with applicable standards, laws and regulations;
 - .4 Observe the provisions of the Act Respecting Occupational Health and Safety and Safety Code for the Construction Industry;
 - .5 Notify workers that they can refuse any work which puts their health or safety at risk;
 - .6 In case of incident, take all necessary measures, including the interruption of Work, to protect the health and safety of workers, the public and the environment, then promptly communicate with Departmental Representative.
- .3 Submit, at project start-up meeting at the latest, site-specific Health and Safety Plan and prior to commencement of Work. Health and Safety Plan must include:
 - .1 Results of site-specific safety hazard assessment;

- .2 Results of safety and health risk or hazard analysis for site tasks and operation (Job Safety Analysis Sheet) found in work plan;
- .3 Emergency Response Plan.
- .4 Submit weekly one (1) copy of Contractor's authorized representative's worksite health and safety inspection report to Departmental Representative.
- .5 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors, including Transport Canada.
- .6 Provide Departmental Representative with investigation report within 24 hours of any accident causing injury and any incident with potential for risks.
Investigation report to include:
 1. Date, time and location of incident/accident;
 2. Name of worker and subcontractor involved in the event;
 3. Number of people involved and condition of the injured individuals;
 4. Identification of witnesses;
 5. Detailed description of tasks conducted at the time of the event;
 6. Equipment used to carry out the tasks at the time of the event;
 7. Remedial actions taken right after the event;
 8. Causes of the event;
 9. Precautionary measures implemented to prevent a similar event from occurring in the future.
- .7 Submit WHMIS MSDS – Material Safety Data Sheets of all products used or stored on sites.
- .8 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within five (5) days, at the very latest. Provide data sheets as defined in Health Canada: Workplace Hazardous Materials Information System (WHMIS, 2015). Revise plan as appropriate and resubmit plan to Departmental Representative within five (5) days after receipt of comments from Departmental Representative.
- .9 Departmental Representative's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .10 Provide and display the list of personnel with first aid training.
- .11 Provide and display the list of personnel with marine first aid training.
- .12 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergencies, including:
 - .1 Emergency Response Plan – transshipment site;
 - .2 Emergency Response Plan – water;
 - .3 Emergency Response Plan – Île aux Plaines site.

- .13 Provide Departmental Representative with a copy of the training certificates for site workers, including the following training programs, if applicable:
 - .1 Workplace first aid and CPR;
 - .2 Marine first aid worker;
 - .3 *Conduite sécuritaire des chariots élévateurs* (mandatory if using lift trucks);
 - .4 Any other training program as required by regulations or by the prevention program and good practice.

“Santé et sécurité générale sur les chantiers de construction” and WHMIS 2015 training certificates of all personnel to be available on site upon request.

- .14 Compliance certificates and plans signed by an Engineer: Contractor to provide Departmental Representative and *Commission des normes, de l'équité, de la santé et de la sécurité du travail* (CNESST) with a copy of all plans, signed and sealed by an Engineer, required under the Safety Code for the Construction Industry (S-2.1, r.4), another act, regulation, or provision of specification or Contract. Contractor to also provide a compliance certificate signed by an Engineer once the structure for which the plans were developed has been completed and before someone uses said structure. A copy of these documents to be available on site at all times.

1.4 FILING OF NOTICE

- .1 Submit the Notice of Opening of the Construction Site to the CNESST prior to beginning of Work. Provide Departmental Representative with copy of the Notice of Opening and Acknowledgment of Receipt sent by the CNESST. Submit the Notice of Closing of the Construction Site to the CNESST, with a copy to the Departmental Representative, at the end of Work.
- .2 Contractor shall be responsible and assume the role of Principal Contractor (Prime Contractor) for each work zone of the worksite. Contractor shall provide a written acknowledgment of this responsibility at least one (1) week of contract award. Contractor to submit written acknowledgment to CNESST along with Notice of Opening of the Construction Site.
- .3 Work zone locations include:
 - .1 Transshipment site (stones);
 - .2 Transshipment site (plantings);
 - .3 Île aux Plaines.
- .4 Contractor shall agree to install proper site separation and identification in order to maintain time and space at all times throughout life of project.

1.5 SAFETY ASSESSMENT

- .1 Perform site specific safety hazard assessment related to project. Produce Job Safety Analysis Sheets.

1.6 MEETINGS

- .1 Schedule and administer a Health and Safety meeting with Departmental Representative prior to commencement of Work. Have weekly meetings thereafter. Write and provide Departmental Representative with minutes of meetings.
- .2 Contractor's decisional Representative to attend all meetings where on-site health and safety issues are brought.
- .3 Contractor to establish a worksite committee and hold meetings as required under the Safety Code for the Construction Industry (S-2.1, r.4) if 25 or more workers are projected to be working on site at any time throughout Work duration. A copy of the minutes shall be submitted to the Departmental Representative no later than five (5) days after committee meeting.
- .4 Notice the Departmental Representative of these meetings at least five (5) days in advance.

1.7 REGULATORY REQUIREMENTS

- .1 Conduct Work in accordance with the Regulatory Requirements of the specification.
- .2 Comply with all applicable laws, regulations and standards for execution of Work.
- .3 Comply with specified standards and regulations to ensure safe operations at site containing hazardous or toxic materials.
- .4 Comply with the Act Respecting Occupational Health and Safety (R.S.Q., c. S-2.1) and the Safety Code for the Construction industry (S-2.1, r.4), as well as all requirements of specification.
- .5 Always use the latest edition of standards specified in the Safety Code for the Construction Industry (S-2.1, r.4), notwithstanding the date indicated in the Code.

1.8 GENERAL REQUIREMENTS

- .1 Prior to commencement of Work, develop written site-specific Prevention Program based on hazard assessment in accordance with sections SAFETY ASSESSMENT and INHERENT RISKS ASSOCIATED WITH WORKSITE of this specification section. Implement, maintain, and enforce plan until final demobilization from site. Prevention Program must address project specifications and cover all Work conducted on the site.
- .2 Prevention Program to minimally include the following:
 - .1 Company Health and Safety Policy;
 - .2 Work phases description;
 - .3 Work total cost, schedule and planned manpower curve;
 - .4 Health and Safety Functional Chart;
 - .5 Site layout and organizations;
 - .6 Identification of risks associated with each phase of Work, corresponding prevention measures and details of implementation;
 - .7 Identification of prevention measures associated with site-specific inherent risks specified in article INHERENT RISKS ASSOCIATED WITH WORKSITE;

- .8 Identification of prevention measures for the health and safety of employees and/or the public on site as specified in article SPECIFIC REQUIREMENTS FOR THE HEALTH AND SAFETY OF OCCUPANTS AND PUBLIC;
- .9 Required training;
- .10 Procedure in case of accident/injuries;
- .11 Stakeholders' written commitment to comply with the Prevention Program;
- .12 Site inspection grid based on the preventive measures;
- .13 On-site contingency and emergency response plans to include the following:
 - .1 Site evacuation procedure – various work areas;
 - .2 Evacuation procedure on the water;
 - .3 Identification of emergency resources (police, firefighter, ambulance, Coastal Watch, etc.);
 - .4 Identification of people in charge on site;
 - .5 Identification of first aid workers;
 - .6 Communication chart (including Site Manager and Departmental Representative);
 - .7 Training required for people tasked with the implementation of plans;
 - .8 Any other necessary information considering the site characteristics.

Departmental Representative shall provide the Contractor with the transshipment site evacuation procedure; Contractor to combine the worksite procedure with the transshipment site procedure and submit to Departmental Representative.

- .3 Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.
- .4 In addition to the Prevention Program, the Contractor shall develop and submit a special written procedure (Special Prevention Program) to the Departmental Representative for any work with a higher risk of accident (e.g. demolition procedure, special installation procedure, lifting plan, confined space entry procedure, power outage procedures, etc.), or upon request by Departmental Representative.
- .5 Contractor to plan and organize Work as to promote elimination, at the source, of dangers or favour collective protection, and thus minimize the use of individual protective equipment.
- .6 Equipment, tool or mean of protection that cannot be installed or used without compromising the health and safety of workers or the public is considered inappropriate for Work.
- .7 All mechanical equipment (for example, but not limited to, people or material hoisting apparatus, power shovels, concrete pumps, concrete saws) must be inspected before shipment. Contractor to obtain and keep on site certificate of inspection of each piece of equipment signed by mechanic dating less than one (1) week before shipment on site. Contractor to provide Departmental Representative with certificate of inspection if requested.
- .8 Make sure all inspections (daily, routine, annual, etc.) of people or material hoisting apparatus required by standards in force are conducted. Make sure to provide a copy of

the certificates of inspection signed by an engineer when requested by the Departmental Representative.

- .9 Departmental Representative may at any time order the immediate stop of any piece of equipment if a defect or risk of accident is suspected, and require inspection by an expert of his choice.
- .10 Departmental Representative to be consulted regarding the on-site location of gas cylinders and reservoirs.

1.9 RESPONSIBILITY

- .1 Contractor to be responsible for and assume all tasks and responsibilities typically taken on by the Prime Contractor under the Act Respecting Occupational Health and Safety (RSQ, c. S-2.1) and the Safety Code for the Construction Industry (S-2.1, r.4).
- .2 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .3 Whatever the size and location of site, Contractor shall clearly identify site limits by physical means. Contractor to also comply with the specific requirements of the regulation in this regard. Means selected to delineate the site shall be submitted to the Departmental Representative.
- .4 Contractor shall be the Principal Contractor as described in the Quebec Act Respecting Occupational Health and Safety for only their scope and areas of work as defined and described in this project specification.
- .5 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.
- .6 For the entire duration of Work, Contractor must install appropriate worksite signalization (both on the water and on land) for visitors.
- .7 Make sure workers possess the required water safety training for work in riparian areas (SIFA).
- .8 Provide Departmental Representative with a functional radio communication system that can be used to communicate with work groups and allow radio aids to marine navigation.

1.10 COMPLIANCE REQUIREMENTS

- .1 Comply with R.S.Q., c. S-2.1, an Act Respecting Health and Safety, and c. S-2.1, r.4 Safety Code for the Construction Industry.
- .2 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.
- .3 Comply with marine transportation regulations.

1.11 UNFORESEEN HAZARDS

- .1 When source of hazard non-specified in Contract Documents that cannot be identified during the preliminary site inspection appears during Work, Contractor must stop work at once, notify On-site Health and Safety Manager and implement temporary protection

measures for workers and public. Notify Departmental Representative at once, both verbally and in writing. Contractor to then proceed to necessary changes in the Prevention Program and implement the required safety measures so that work can safely resume.

1.12 INHERENT RISKS ASSOCIATED WITH WORKSITE

- .1 In addition to risks associated with tasks to be conducted, personnel undertaking work on site will be exposed to inherent risks associated with the location where work will be conducted. Transshipment Site Operator will use the same access roads and storage sites surrounding the transshipment area.
- .2 The following elements will be present on the site:
 - .1 Overhead power lines;
 - .2 Underground utility lines (power, gas, vapour, aqueduct, etc.);
 - .3 Trees and landscaping (to be preserved and protected);
 - .4 Bicycle path;
 - .5 Fences;
 - .6 Nearby body of water.
- .3 In the fall, from mid-September to December, migratory bird hunters can be found around the islands.
- .4 Contractor to conduct Site Risk Assessment to validate information and see if other risks are present on site. Contractor to include all risks identified in his Prevention Program.

1.13 INTERFERENCE TO NAVIGATION

- .1 Contractor to consider the following items regarding his floating equipment:
 - .1 Contractor to continuously and precisely report all movements of the floating equipment to the Canadian Coast Guard Marine Communications and Traffic Services. Contractor to also report the start and end times of all work shifts.
 - .2 Contractor to notify Departmental Representative forty-eight (48) hours in advance, if possible, of any particular movement of his floating equipment (either for refuelling, repair, etc.).
- .2 If Contractor's equipment happens to obstruct navigation, Contractor must:
 - .1 Notify the Department of Canadian Coast Guard Marine Communications and Traffic Services and the Departmental Representative;
 - .2 Proceed and pay for the removal of the equipment without delay. If the Contractor fails to fulfil this obligation, the Department shall be responsible for the removal of the obstacle. Expenses incurred will be charged to the Contractor.
- .3 Contractor to provide, install (put in the water), maintain and pay for all required buoys, beacons or markers to properly execute Work. If by accident, one or several buoys/markers sink or float away, these elements must be refloated and/or recovered at the Contractor's expense and to the satisfaction of the Departmental Representative. Contractor is responsible for any accident, whatever the nature, caused by poor

positioning or visibility of buoys/markers during the day or their poor lighting during the night, or due to any other reason.

1.14 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province having jurisdiction, and in consultation with Departmental Representative.
- .2 At least the following information and documents must be displayed in a readily available location for workers:
 - .1 Notice of Opening of the Construction Site;
 - .2 Identification of Main Contractor;
 - .3 Company Occupational Health and Safety Policy (OHS);
 - .4 Site-specific Prevention Program;
 - .5 Emergency Plan;
 - .6 Minutes of site committee meetings;
 - .7 Names of Representatives attending the site committee meeting;
 - .8 Name of first aid workers;
 - .9 Intervention and correction reports issued by the CNESST.

1.15 CORRECTION OF NON-COMPLIANCE

- .1 Inspect work location, fill in the site inspection grid and submit to Departmental Representative in accordance with article ACTION AND INFORMATIONAL SUBMITTALS of this section.
- .2 Immediately address health and safety non-compliance issues identified by health and safety co-ordinator, authorities having jurisdiction or by Departmental Representative.
- .3 Provide Departmental Representative with written report of action taken to correct non-compliance of health and safety issues identified.
- .4 Contractor to provide Safety Officer or, when there is no Safety Officer, the person authorized to manage the Health and Safety, with the necessary authority to order the stoppage and resumption of Work when he or she deems it necessary or preferable for health and safety reasons. Safety Officer to ensure public and site personnel health and safety, as well as environmental protection, are always given precedence over issues related to cost and schedule.
- .5 Departmental Representative, or its authorized representative, may stop Work if non-compliance of health and safety regulations is not corrected. Without limiting the generality of the previous sections, Departmental Representative may stop Work if a risk to the health and safety of the personnel and public or to the environment is deemed to be present.

1.16 WORK NEAR A BODY OF WATER

- .1 For all work conducted near a body of water (including work above water, work on wharves, work around watercourses, etc.), Contractor to comply with requirements of the

following paragraphs in addition to meeting requirements of the Safety Code for the Construction Industry.

- .2 Contractor to plan work as to implement safety measures preventing workers from falling into water. The use of these safety measures should be preferred to wearing life jackets, although these jackets are required at all times.
- .3 Submit the following documents to the CNESST and Departmental Representative prior to the start of Work:
 - .1 Description of the body of water;
 - .2 Description of work conducted near the body of water;
 - .3 Water transport plan tailored to Work and characteristics of the body of water;
 - .4 Rescue plan tailored to Work and characteristics of the body of water;
 - .5 Marine first aid certifications;
 - .6 List of watercraft and work platforms used throughout work with indication of their respective use;
 - .7 Proof that assessment and inspection of every motorized and self-propelled craft or platform was conducted by Transport Canada.
- .4 Each document listed above to minimally include information required in Section 11 of the Safety Code for the Construction Industry.
- .5 If Work, or part of it, is conducted in winter, safety measures included in the required documents above must be adjusted accordingly.
- .6 Contractor to provide the Departmental Representative with the training certificate required under Section 11.2 of the Safety Code for the Construction Industry for the following people:
 - .1 Appointed person to prepare documents required under the previous paragraph; and
 - .2 Each manager of transport or rescue operations.
- .7 If the rescue plan foresees the use of a craft, Contractor to provide Departmental Representative with the card or certificate issued by Transport Canada proving the qualification of responders for the Work.
- .8 Contractor to include in his weekly inspection grid the devices required under Sections 11.4 and 11.5 of the Safety Code for the Construction Industry.
- .9 Make sure a lifeboat is berthed and in the water at every location where a worker is likely to fall into the water. However, a lifeboat can serve several locations across the same site provided that the distance between the locations and the lifeboat is no greater than 30 m.
- .10 If the work place is a loading area, basin, jetty, wharf or another similar structure, a ladder with at least two (2) steps under the water surface must be installed every 60 m at the front of the structure.

1.17 VIOLENCE PREVENTION

- .1 Health and safety management on PWGSC worksites includes the implementation of measures for the protection of the mental health of everyone having access to the site

where work takes place. Thus, in addition to physical violence, verbal abuse, intimidation and harassment are not tolerated on the worksite. Anyone who demonstrates such gesture or behaviour shall receive a warning and/or could be definitively expelled from the worksite by the Departmental Representative.

1.18 WORK STOPPAGE

- .1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

1.19 SECURITY

- .1 Where security has been reduced by Work of Contract, provide temporary means to maintain security.
- .2 Security clearances:
 - .1 Personnel employed on this project will be subject to security check. Obtain clearance, as instructed, for each individual who will require to enter premises;
 - .2 Personnel will be checked daily at start of work shift and provided with pass which must be worn at all times. Pass must be returned at end of work shift and personnel checked out.

1.20 SMOKE-FREE ENVIRONMENT

- .1 Smoking is forbidden at all times.

1.21 HEALTH AND SAFETY SUBORDINATION AGREEMENT

Project: _____ **Address:** _____

EXTERNAL CONTRACTOR

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

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

Name of Representative: _____

Name of business: _____

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

Approximate dates of work (start-end): _____

Signature: _____ Date: _____

PRINCIPAL CONTRACTOR

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

Name of Representative: _____

Name of the Principal Contractor's business: _____

Signature: _____ Date: _____

Submit a completed and signed copy to PWGSC's Departmental Representative.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 01 11 01 – Summary of Work.
- .2 01 32 16.07 – Construction Progress Schedule – Bar (GANTT) Chart.
- .3 01 52 00 – Construction Facilities.
- .4 01 56 00 – Temporary Barriers and Enclosures.
- .5 01 74 11 – Cleaning.
- .6 31 23 33.01 – Excavating, Trenching and Backfilling.
- .7 35 31 19 – Revetments.
- .8 Appendix 2 – Mitigation measures.
- .9 Any other relevant section.

1.2 SITE CONDITIONS

- .1 Appendix 2 contains mitigation measures taken from the Environmental Impact Assessment that must be complied with, as well as items of this specification. In case of discrepancy, the most restrictive shall apply.
- .2 Only pedestrian traffic is authorized on Île aux Plaines.
- .3 The use of construction equipment in the water, as well as traffic outside structure right-of-way, is prohibited.
- .4 Do not use borrow material which originates from watercourse bed or shore.
- .5 Conduct work as to minimize environmental impacts on watercourses and wetlands.
- .6 The discharge of excavated and waste materials or debris in watercourses or wetlands is prohibited.
- .7 Only use equipment which works with biodegradable oil and presents a valid certificate.
- .8 Traffic, or encroachment outside work boundaries at the right-of-way of the breakwater and shore nourishment, as specified on drawings, is strictly prohibited.

1.3 DEFINITIONS AND REFERENCES

- .1 Definitions:
 - .1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humans; or degrade environment aesthetically, culturally and/or historically;
 - .2 Prevention of pollution and environmental damage: protection of soil, water, air, quality of life, biological and cultural resources. It also includes the management

- of visual aesthetics, noise, waste (solid, chemical, gaseous and liquid), as well as other pollutants;
- .3 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction.
- .2 Reference Standards:
- .1 Migratory Birds Convention Act (1994) and Migratory Bird Sanctuary regulations;
 - .2 Canada Wildlife Act and Wildlife Area Regulations;
 - .3 Species at Risk Act (SRA);
 - .4 Canadian Environmental Assessment Act (CEAA, 2012);
 - .5 Fisheries Act (R.S.C., 1985, c. F-14);
 - .6 Navigation Protection Act (R.S.C., 1985, c. N-22);
 - .7 Environment Quality Act (EQA);
 - .8 Act Respecting the Conservation and Development of Wildlife (ARCDW);
 - .9 Contractor may also refer to the following documents:
 - .1 *Les recommandations pour la gestion des matières en suspension (MES) lors des activités de dragage* (MELCC and ECCC, 2016);
 - .2 *Lignes directrices relativement aux niveaux sonores provenant d'un chantier de construction industriel* (MELCC, 2015);
 - .3 *Protection de l'environnement durant les travaux, Tome II-Construction Routière- 2018 (MTQ)*.
 - .10 U.S. Environmental Protection Agency (EPA)/Office of Water
 - .1 EPA 832/R-92-005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.
 - .11 Appendix 2: Mitigation Measures Presented as Part of the Environmental Impact Assessment.

1.4 PERMITS AND AUTHORIZATIONS

- .1 Environment and Climate Change Canada's Canadian Wildlife Service is responsible for issuing permits for execution of Work within boundaries of the Îles de la Paix National Wildlife Area and Migratory Bird Sanctuary. Two permits are required:
 - .1 Temporary permit subjected to Canada Wildlife Act (R.S.C., 1985, c. W-9) and issued under Article 4 of Wildlife Area Regulations (C.R.C., c. 1609);
 - .2 Temporary permits subjected to Migratory Birds Convention Act (S.C., 1994, c. 22) and issued under Article 9 of Migratory Birds Sanctuary Regulations (C.R.C., c. 1036).
- .2 Transport Canada is responsible for issuing authorizations regarding the development of new structures in navigable waters under the Navigation Protection Act.
- .3 Fisheries and Oceans Canada (DFO) is responsible for issuing authorizations required for the development of new structures in fish habitat under the Fisheries Act.

- .4 Ministère de l'Environnement et de la Lutte contre les changements climatiques (MELCC) is responsible for issuing certificates of authorization under Article 22 of the Environment Quality Act (EQA).
- .5 Ministère des Forêts, de la Faune et des Parcs (MFFP) is responsible for issuing certificates of authorization under Article 128.7 of the Act Respecting the Conservation and Development of Wildlife (ARCDW).
- .6 Permits and authorizations mentioned above shall be obtained by Canada prior to Work. Note that permits and authorizations pertaining to work for the development of temporary accesses (e.g. jetties) are requested for the year 2019 only.
- .7 Depending on the selected method, the Contractor shall be responsible for obtaining any additional permits or authorizations (e.g. municipal or RCM). If permits and authorizations obtained beforehand by Canada have to be modified as a result of the Contractor's presented work method, Contractor to also be responsible for obtaining these permits/authorizations.
- .8 All terms and conditions included in the various permits and authorizations must be complied with.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Contractor to submit Environmental Protection Plan for review and approval by Departmental Representative within no more than fifteen (15) working days after award of contract.
 - .1 Plan to comply with EPA 832/R-92 2005 standard and Section 01 35 43 – Environmental Procedures;
 - .2 Environmental Protection Plan must include comprehensive overview of known or potential environmental issues to be addressed during construction;
 - .3 Address topics at level of detail commensurate with environmental issues and required construction tasks;
 - .4 Work may only start once the plan submitted by the Contractor is approved by the Departmental Representative;
 - .5 Contractor to update and submit the Environmental Protection Plan to the Departmental Representative when changes are required. It may be requested that modifications to the Environmental Protection Plan be clearly documented and approved beforehand by the Departmental Representative. Allow five (5) working days for any follow-up modification to the document.
- .2 Include in Contractor's Environmental Protection Plan:
 - .1 Name(s) of person(s) responsible for ensuring adherence to Environmental Protection Plan;
 - .2 Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from site;
 - .3 Name(s) and qualifications of person(s) responsible for training site personnel;
 - .4 Descriptions of environmental protection personnel training program;
 - .5 Fire Safety Prevention Plan: this section of the Environmental Protection Plan must be submitted by the Contractor to the Beauharnois Fire Department before

- start of Work. Contractor to work alongside Fire Department and make corrections to the fire safety plan according comments and input by the Fire Department;
- .6 Soundscape Management Plan: plan to specify measures to maintain noise at a level which complies with Ministère de l'Environnement et de la Lutte contre les changements climatiques (MELCC) criteria throughout Work. Expected sources of noise include: use of heavy machinery and placement of the various granular materials;
 - .7 Erosion and sediment control plan identifying type and location of erosion and sediment controls to be provided including monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws, regulations and the following documents: EPA 832/R-92-005 Chapter 3, "Surveillance environnementale des chantiers routiers – Guide de terrain (MTQ, 2018)";
 - .8 Drawings indicating locations of access roads for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on site;
 - .9 Traffic Control Plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather
 - .1 Plans to include measures to minimize amount of material transported onto paved public roads by vehicles or runoff.
 - .10 Spill Control Plan to include procedures, instructions, and reports to be used in event of spill of regulated substance;
 - .11 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris;
 - .12 Air pollution control plan detailing provisions to assure that dust, debris, materials, and trash, are contained on project site;
 - .13 Contaminant Prevention Plan identifying potentially hazardous substances to be used on job site; intended actions to prevent introduction of such materials into air, water, or ground; and detailing provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials;
 - .14 Waste Water Management Plan identifying methods and procedures for management and discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water;
 - .15 Historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands;
 - .16 Monitoring plan of waterfowl and other birds potentially occupying or nesting on Île aux Plaines worksite in accordance with Migratory Birds Convention Act (1994) and Migratory Bird Sanctuary regulations as the work is performed on a waterfowl gathering area;
 - .17 Management of Suspended Solids (SS)

- .1 Submit Manufacturer's data sheet, as well as directives and documents regarding the turbidity curtain to be installed along the jetties and breakwaters. Contractor to provide Departmental Representative with work method five (5) working days before start of work which requires the installation of a turbidity curtain;
 - .2 Contractor to provide Water Quality Monitoring Program as to quantify suspended solids produced during work. Suspended Solids Monitoring Program shall be applied throughout entire duration of work which presents risk of release of suspended solids in the environment and shall comply with provisions of this specification.
- .18 Contractor to provide Departmental Representative with his work methods for approval. Refer to articles of the various Specification sections.
- .1 Work may only start once methods proposed by the Contractor have been accepted by the Departmental Representative. The latter shall have five (5) working days to respond to the Contractor following each subsequent submittal of documents.

1.6 FIRES

- .1 Fires and burning of rubbish on site is not permitted.
- .2 Contractor is responsible for preventing forest fires throughout the work area and must apply the Prevention Plan submitted to the Beauharnois Fire Department.

1.7 PROTECTION AGAINST EROSION

- .1 Materials
 - .1 Silt Fence
 - .1 One-piece non-woven geotextile whose seams are as resistant as the geotextile material itself;
 - .2 Stakes to be natural wood with minimal length of 1.2 m and sufficient size to withstand peak flow.
 - .2 Pump
 - .1 Pump and pipe inlets and outlets used under water to be equipped with strainer to prevent aquatic fauna from getting into pumping pipes.
- .2 Pumped Water
 - .1 Do not discharge pumped water containing suspended solids in the watercourse;
 - .2 Install outfalls in the form of rock chutes as directed by Departmental Representative so that runoff water can smoothly flow into the watercourse;
 - .3 Construct retention ponds as directed by Departmental Representative.

1.8 SITE CLEARING AND PLANT PROTECTION

- .1 Protect trees and plants on site and adjacent areas as indicated.
- .2 Contractor to have the Departmental Representative approve the identification of each tree (dead or alive) which interferes with Work before cutting or moving them.

- .1 Under no circumstances can a tree or shrub be cut without prior authorization by Departmental Representative;
 - .2 BNQ standards for Arboreal and Horticultural Maintenance (NQ 0605-200-2001) shall be applied when proceeding to authorize cutting and pruning;
 - .3 Contractor to make sure no active nest is present before undergoing any work of this nature;
 - .4 Contractor to notify Departmental Representative at once upon discovery of a bird nest. Departmental Representative to call a meeting to rule on measures to be taken.
- .3 Only cutting of trees or shrubs which limit traffic of machinery along the shore (temporary road on the shore) can be proposed.
- .1 When possible, temporary roads on the shore must avoid living trees so that they are left in place directly on the projected shore nourishment;
 - .2 Dead trees on the shore or cut living trees must be temporarily placed outside the work area. These wood residues must be put back in place on the island once development work is finished while targeting a natural configuration and as directed by the Departmental Representative;
 - .3 Contractor to have the Departmental Representative approve the sector where he wishes to temporarily store the dead trees.
- .4 Protect trees and shrubs adjacent to limits of construction work (right-of-way), storage areas and trucking lanes. Place protective netting around trees and shrubs as needed. The trees and shrubs that the Departmental Representative deems sufficiently damaged by the Contractor, so as to cast doubt on the plant's survival, shall be replaced by the latter, two (2) equivalent plantings for each damaged plant, of species (plants) identified by the Departmental Representative.
- .5 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage.
- .1 Avoid unnecessary traffic, dumping and storage of materials over root zones.
- .6 Minimize the area of topsoil and vegetation stripped.
- .7 Contractor to notably comply with Section 01 56 00 – Temporary Barriers and Enclosures when it comes to temporary accesses leading to the plantation areas.

1.9 WETLAND CREATION

- .1 The following planting periods must be complied with:
 - .1 Planting of **grass beds**: between the end of the spring flood and August 16th;
 - .2 Planting of **shrub swamps** (on the shore): between the end of the spring flood and mid-August;
 - .3 Planting of **shrub swamps** (on the shore nourishment crest): between the end of the spring flood and the completion of shore nourishment work, ideally no later than mid-September;
 - .4 Planting of **treed swamps**: between the end of the spring flood and August 16th.

1.10 WORK IN AND/OR ADJACENT TO WATERWAYS

- .1 The Environmental Protection Plan, required in Section 1.5.2, must explicitly present all the elements used to protect watercourses and shores.
- .2 It is forbidden to discharge, without suitable filtration system, water containing sediments or suspended solids which:
 - .1 Causes a rise of 25 mg/l in the ambient concentration of watercourses;
 - .2 Causes a rise of 500 mg/l in the ambient concentration of sewage systems.
- .3 Control the discharge or disposal of water containing sediments, suspended solids and/or hazardous substances in accordance with requirements of local authorities and laws/regulations in force.
- .4 Do not carry out any work near water courses during periods of high water or heavy rain.
- .5 Any changes in work methods leading to work in a water environment and in fish habitat must be approved by the Departmental Representative.
- .6 Construction equipment to be operated above the water level. Work within the 10-m riparian strip (measured from the high water mark [HWM]) is forbidden unless work is confined within the work area; if so, the Contractor shall apply all mitigation measures included in this specification. Transport in watercourses and on Île aux Plaines using machinery is prohibited. Design and construct jetties, or other temporary access in watercourses, so that machinery is never operated in the water and as to minimize erosion and suspended solids.
- .7 Any piles of unconsolidated materials, including access roads within the riparian buffer of a water course (20-meter distance), must be protected from erosion, notably through the use of a geotextile membrane or a straw bale filter, to avoid transporting sediment towards the water course.
- .8 The pumps must be equipped with a device (strainer or other) to prevent aquatic fauna from entering the pumping system.
- .9 Flow of watercourse known to be a fish habitat cannot be interrupted. Contractor to ensure minimum flow downstream of Work corresponding to the rated watercourse flow.
- .10 Watercourses to remain free of excavated materials, waste, debris or materials.

1.11 WORK METHODS

- .1 All work conducted as part of this project require the Contractor to submit his work methods in a clear and detailed way, including, but not limited to:
 - .1 Use of the transshipment site;
 - .2 Transport of goods from the transshipment site to the worksite;
 - .3 Construction and removal of temporary jetties and contractor areas;
 - .4 Construction of breakwater and temporary road on the breakwater;
 - .5 Construction and removal of access to shore;
 - .6 Construction of temporary road along the shore;
 - .7 Spreading and levelling of the shore nourishment;
 - .8 Proposed planting and development work;

- .9 Site rehabilitation, cleaning and dismantling of temporary access structures.
- .2 Contractor to ensure land and maritime transport of equipment/materials with sufficient capacity to execute work in accordance with approved baseline schedule presented in Section 01 32 16.07 – Construction Progress Schedule – Bar (GANTT) Chart, taking into account site, safety and regulatory constraints.
- .3 Contractor to refer to Section 01 56 00 – Temporary Barriers and Enclosures for the construction of temporary access structures. Contractor to also make sure to maintain minimum freeboards corresponding to the vertical distance between the water level and the crest of the projected temporary structures.
- .4 Contractor to conduct work outside of the water and take into consideration that water level can fluctuate according to several parameters, including wind, waves, water level (including the one resulting from the control of water retaining works – dam and locks – upstream), temperature, navigation, etc. The Contractor is responsible for determining the elevations of temporary access structures (jetties, road on the breakwater and access road to the beach).
 - .1 Departmental Representative may demand raising the elevation of structures if they no longer comply with the required minimum freeboard. Water level statistics in the area are available for consultation on the Centre d’expertise hydrique du Québec (CEHQ)’s website through data records at Pointe-Claire station (No. 000091):
<https://www.cehq.gouv.qc.ca/suivihydro/graphique.asp?NoStation=000091>.
Appendix 3 also provides statistics regarding water level at the site;
 - .2 Contractor to consider that weather conditions mentioned above (section 1.11.4) can lead to important differences in levels known to this day. Contractor to be responsible for conducting work during appropriate times; no claim regarding weather conditions on site shall be admissible.
- .5 Contractor’s work methods to comply with all sections and provisions of this specification and allow construction of structures as specified on drawings.
- .6 Contractor’s work methods to consider suspended solids control provisions specified in the following article.

1.12 EROSION AND SUSPENDED SOLIDS (SS) CONTROL

- .1 Contractor to plan work as to protect the shorelines of water bodies against erosion and gullyng, and minimize sediment transport towards Saint-Louis Lake or any other watercourse. Temporary accesses developed on the shorelines shall also be stabilized if they result in the introduction of sediments in water bodies.
- .2 Contractor to provide Water Quality Monitoring Program to be applied throughout the duration of work as to quantify SS concentrations produced by his work in comparison with ambient conditions:
 - .1 Do not discharge or generate pumped, drainage water, or water from any other source or activity, with concentration of suspended solids exceeding the Canadian Council of Ministers of the Environment (CCME)’s standard which is an increase of 25 mg/L with respect to ambient concentration.

- .2 Based on “Recommendations for the Management of Suspended Solids (SS) During Dredging Activities (MELCC and ECCC, 2016)”, Contractor to present a work method which proves that every attempt has been done so that Work does not generate concentrations of suspended solids which exceed an increase of 25 mg/l above the river’s ambient concentrations:
 - .1 To the extent possible, comply with maximum suspended solid concentration, which is 25 mg/l greater than ambient concentrations, 100 m downstream of Work. If an increase greater than 25 mg/l above ambient concentrations is measured, the Departmental Representative shall convene a site meeting with the Contractor to discuss required measures to be taken to quickly rectify the situation;
 - .2 Contractor is responsible for the characterization of the river’s ambient concentrations of SS for comparison with concentrations measured during Work via four measurements per day during work and upon request by the Departmental Representative when deemed necessary;
 - .3 Contractor’s work method to provide adequate accuracy, otherwise the Departmental Representative can demand the modification of the procedure and/or cessation of work time to ensure SS concentration decreases and stays under the allowable criterion;
 - .4 Contractor to be responsible for, but not limited to, providing all equipment, specialized workforce, transport, calibration, data analysis, reports, monitoring, maintenance, inspections and signage associated with the procedure implemented for the monitoring of SS discharge levels into the environment.
- .3 Departmental Representative reserves the right to stop Work if discharged SS concentrations exceed criteria indicated in this specification or if doubts remain regarding the Contractor’s work method or its implementation.
- .3 Proceed to routine inspection of work areas to detect signs of erosion and fine particles transportation towards water bodies; implement appropriate mitigation measures at once.
- .4 Introduction of Materials:
 - .1 Put down materials directly on the watercourse bed instead of emptying the content of the bucket from the water surface or during its descent to lessen re-suspension of sediments;
 - .2 During maneuvers, Contractor to reduce descent and ascent speed of the hydraulic shovel and avoid putting down the bucket on the watercourse bed to level work surfaces;
 - .3 Granular material introduced in the aquatic environment must be clean, but unwashed, i.e. free of fine particles.
- .5 Turbidity Curtain:
 - .1 Turbidity curtain to be installed for the following phases:
 - .1 Construction of temporary jetties;
 - .2 Construction of contractor areas;
 - .3 Construction of breakwaters and temporary road on the breakwaters;
 - .4 Construction of temporary accesses to the shore;

- .5 Construction of temporary road along the shore;
- .6 Spreading and levelling of shore nourishment.
- .2 Installation of turbidity curtain to comply with manufacturer's data sheet and recommendations. Contractor to be responsible for the efficiency of his installation configuration in limiting SS propagation. Contractor to ensure anchors and type of curtain chosen are fit to withstand stress caused by waves and speeds up to 1.5 m/s;
- .3 Contractor to be responsible for signage as to make turbidity curtain obvious to navigation (refer to Section 01 52 00 – Construction Facilities);
- .4 Turbidity curtain configuration must allow containment of water packed with SS and compliance with concentration targets mentioned in this specification section;
- .5 Contractor to provide Departmental Representative with his work method for approval, including his curtain removal method, before the start of every work phase which requires the use of a turbidity curtain.
- .6 Unless otherwise indicated by Departmental Representative, remove temporary erosion and sediment transport control devices once work is completed.

1.13 WORK IN AQUATIC HABITAT AND IN PRESENCE OF WILDLIFE

- .1 Comply with the annual restriction period for work in a fish habitat for the St. Lawrence River, and depending on fish species found in the watercourse. The restriction period is from March 15th to June 1st for work within the high water mark (HWM). Work can start on June 3rd for the East jetty and on July 17th for the West jetty.
- .2 Encroachment upon the islands is not authorized except for pedestrian traffic restricted to the work boundaries. Special attention should also be paid from June 1st to October 15th as to prevent impact on beach areas located above embankments which may be used as turtle egg-laying sites. Departmental Representative to be notified of any signs of turtle breeding within the work areas. If so, special measures shall be taken to protect these species.
- .3 If a turtle nest is discovered, and after authorization by the Departmental Representative, install a temporary fence around the nest as to avoid stepping on it. Remove fence at the end of Work, or at the end of August at the latest.
- .4 Contractor to minimize removal of natural sand, wood and rock debris, or any other materials, from banks, shores or from the bed of water bodies.
- .5 Contractor to make sure all work conducted in water or on structures located on the water does not block the passage of fish and cause their stranding or death.
- .6 Contractor cannot, at any time, destroy an habitat or site which is known to be used by the wildlife (beaver dam, bird nest, fox den, etc.).
- .7 Contractor to notify Departmental Representative at once upon discovery of bird nest or any other habitat or site used by the wildlife (refer to article 1.8.2). Departmental Representative may call for a meeting to decide on measures to be taken.
- .8 If a female duck and her brood are present on the work premises, Contractor must wait for them to leave the site on their own before resuming work.

1.14 SOIL AND WATER POLLUTION PREVENTION

- .1 Contractor and Sub-contractors who conduct work requiring the use of motorized equipment, refuelling or using hazardous products, must know, apply and include in their Prevention Program the spill response procedures. This procedure shall be posted within view of employees, on the work sites.
- .2 Contractor must ensure that machinery, tools and equipment used to carry out the work are safe, well-maintained and in good working order. Departmental Representative reserves the right to refuse access or to remove from the work site machinery, tools and equipment which does not meet these requirements. Any equipment which is visibly in a poor state of repair and showing signs of leakage or risks of leakage will be removed from the work site at the expense of the Contractor or the Owner of the equipment, without any cost to the Client. Further, machinery that is to be driven or operated less than 20 m from the high-water mark of a watercourse or the St. Lawrence River must use biodegradable vegetable oil in accordance with standard OECD 301-B, with the exception of bulk transport trucks (bio-based content [at least 80%] and biodegradability certified in accordance with standard OECD B301, or equivalent [\geq 60% biodegradation in 28 days]). Contractor to provide certificates of analysis issued by a recognized organization which certifies that machinery is compliant.
- .3 Departmental Representative reserves the right to deny the access or evacuate from the worksite machinery, tools and equipment which do not meet these requirements. Noticeably poorly maintained equipment which shows signs or risks of leak shall be evacuated from the worksite. Recovery of contaminated materials shall be paid by the Contractor, at no cost for the Client and with no impact on deadlines.
- .4 Hazardous materials and hydrocarbons can be stored on the premises provided that a hydrocarbon containment basin is installed beforehand.
 - .1 Containment basin to have a minimum volume which equals to 110% of the hazardous material or hydrocarbon content of the device or the tank/container capacity;
 - .2 Machinery refuelling is permitted above the containment basin;
 - .3 Location of containment basins to be jointly decided by Contractor and Departmental Representative;
 - .4 Basin to be protected from rain and not collect precipitation;
 - .5 Hazardous material and hydrocarbons must be removed from site in case of bad weather or flash flood forecast.
- .5 Outside contractor areas duly authorized by the Departmental Representative, general maintenance and cleaning of mobile equipment and vehicles must be done outside work areas located on Île aux Plaines and more than 30 m from the watercourse.
- .6 Evacuate runoff water off transshipment site by channelling it towards a filtering berm or sedimentation basin. Water will then be filtered by a turbidity curtain, thus promoting sedimentation before water reaches a water body or watercourse. As the rock material used for temporary end permanent work construction is of greater diameter than 50 mm, runoff water will percolate.
- .7 Put temporary physical protection measures in place to prevent any soil loss caused by rain and snowmelt.

- .8 Temporary installations in wetlands and any other areas of Île aux Plaines or Saint-Louis lake are prohibited. Further, soil and drainage conditions must be maintained. All work is confined within areas identified on plans C201 and C202 and in specification 01 11 00, subsection 1.9.
 - .1 Contractor to provide Departmental Representative with remediation plan for approval should degradation of a wetland or grassbed outside the specified boundaries occur. Remediation to be paid entirely by Contractor;
 - .2 If degradation of the lake shore occurs outside work limits, Contractor will present a rehabilitation plan for approval by Department Representative. All costs to be assumed by the Contractor.

1.15 INVASIVE ALIEN SPECIES

- .1 If machinery has to be used at locations on the worksite where there are invasive flower species (common reed, purple loosestrife, reed phalaris), Contractor to clean all machinery to be used in environment where one of these species is found before being used at another site so that it is free of mud, wildlife species or plant parts. Wash water shall be confined and managed to the satisfaction of the Departmental Representative. Upon award of contract, a map showing the location of listed invasive flower species shall be provided to the Contractor. If other locations which presents invasive flower species are discovered during work, the procedure for cleaning of machinery shall be implemented.
- .2 Any stripped topsoil with invasive species seed bank shall be transported to a MELCC's authorized site and be replaced, if needed, with soil free of invasive alien plants or parts of plants.
- .3 Contractor shall prove that the floating equipment is free of invasive species:
 - .1 For equipment cleaned and stored on land just before Work, Contractor to only be required to provide Departmental Representative with a written list of such equipment, including pictures of the hull, location of storage and expected date of introduction into the water. Departmental Representative to be able to verify if equipment was indeed clean and stored on land before execution of Work;
 - .2 For equipment already in the water, Contractor to prove that it remained in the immediate vicinity of the Montreal Island over the past twelve (12) months, or more, otherwise the Contractor to:
 - .1 Provide written inspection report just before mobilization of equipment to the worksite certifying that equipment is free of invasive species. Report to be produced by a biologist specialized in the identification of fresh water aquatic fauna. Sampling to be conducted by divers. Report to include, but not be limited to the following information: list of inspected equipment (tug-boats, barges, etc.), date and location of inspection, summary of sampling and identification procedures, list of samples, table of results and certification regarding the presence or absence of invasive species. Report to contain photographs and be signed by the qualified biologist before being submitted to the Project Manager together with the other required contract documents, and before mobilization of equipment to the worksite;

- .2 In the event that the inspection report confirms the presence of invasive species, Contractor is required to replace the equipment or to proceed, at his own expenses, to the complete cleaning of the equipment. Description of the cleaning work done shall be included in the Biologist's new inspection report (post-cleaning) together with all the relevant information mentioned above.
- .4 Departmental Representative reserves the right to conduct a counter-assessment at any time.
- .5 In the event that invasive species are observed, Contractor shall stop work and proceed, at his own expenses, to the cleaning of affected equipment and follow the procedure mentioned above.

1.16 AIR QUALITY MANAGEMENT

- .1 Control emission produced by equipment, machinery, vehicles and construction facilities in accordance with requirements of local, provincial and federal jurisdictions. Equip vehicles with operational anti-pollution exhaust systems. If possible, turn off engines of gas-powered equipment and vehicles when not being used.
- .2 Comply with the following criteria regarding fine and total particle emission:
 - .1 Fine particles (2.5 µm): 3 hours (35 µg/m³; Environment Canada), 24 hours (30 µg/m³; Appendix K – Clean Air Regulation);
 - .2 Total suspended particles: 1 hour (300 µg/m³; Clean Air Regulation which replaces regulations 44 and 44-1 of the *Communauté métropolitaine de Montréal*), 8 hours (190 µg/m³; Clean Air Regulation which replaces regulations 44 and 44-1 of the *Communauté métropolitaine de Montréal*) and 24 hours (120 µg/m³; Clean Air Regulation).
- .3 Cover or wet down dry materials and rubbish to prevent blowing dust and debris.
- .4 Use dump trucks (watertight or standard bed, depending on the needs) covered with a tarp as to limit dispersal of fine particles in the air.
- .5 Provide for watering of stones on site in case their handling is to generate too much dust.
- .6 Restrict traffic of machinery to preferred routes within the work area and prohibit traffic outside the specified areas.
- .7 Comply with speed limits, as well as permitted loads, as to preserve the quality of the road network and reduce noise and dust emission.
- .8 Use dust control liquid on site if needed: no hygroscopic salt-based dust control liquid shall be authorized on site within 50 meters of Saint-Louis Lake (BNQ 2410-300). Surfaces within this area shall be treated with water only. During the summer, Contractor to regularly water bare surfaces (developed road, worksite area).
- .9 Clean roadways used if necessary.

1.17 NOISE POLLUTION PREVENTION

- .1 Work to be conducted in accordance with schedule which complies with regulation in force.

- .2 Client to implement communication procedure for information of citizens regarding site noise management and formulation of complaints or comments where applicable.
- .3 Guidelines with respect to noise level originating from an industrial construction site established by the MELCC shall be implemented:
 - .1 All feasible and reasonable measures shall be taken by Contractor so that the reference noise level for 12-hours (L_{Ar} 12h) coming from the construction site is equal to or below the following highest noise level: 55 dB or the initial noise level if higher than 55 dB. This limit applies to all receiving points for residential use, or equivalent (hospital, institution, school);
 - .2 It was agreed that there are situations where constraints are such that the Contractor cannot conduct Work while complying with these boundaries. If so, Contractor to:
 - .1 Provide for, identify and limit these situations as far as possible in advance;
 - .2 Specify the nature of work and sources of noise in question;
 - .3 Defend the construction methods used in relation to available alternatives;
 - .4 Demonstrate that all reasonable and feasible measures are taken to minimize the extent and duration of exceedance;
 - .5 Estimate the extent and duration of foreseen exceedance;
 - .6 Plan for monitoring measures to assess the actual impact of these situations and take necessary remedial actions.
- .4 Use equipment which generates reduced noise. Make sure equipment used is equipped with a muffler of good quality and in proper working condition.
- .5 Whenever possible, place noisy equipment far from sensitive zones (homes).
- .6 Maintain access roads level as to reduce truck impact noise.
- .7 Restrict the use of compression release engine brakes to emergency situations.
- .8 Turn off any electric or mechanic equipment that is not being used.
- .9 Avoid the impact noise of dump truck rear panels and implement material unloading methods which limit impact noise.

1.18 PROCEDURES IN CASE OF HYDROCARBON, HAZARDOUS MATERIAL OR OTHER CONTAMINANT SPILL

- .1 In case a spill occurs, it is the Contractor's responsibility to carry out the response operations and the cleaning of the location where the spill occurred, following this procedure:
 - .1 Ensure the safety of people, cut off the source, and immediately recover the spill;
 - .2 If Contractor is unable to immediately contain or recover the spill or if the spill occurs in water, the following must be advised, depending on the location of the work:
 - .1 Environment Canada's Emergency Service (1-866-283-2333);
 - .2 Quebec's Urgence-Environnement (1-866-694-5454);

- .3 Transport Canada for marine equipment.
- .2 Contractor to have one emergency response kit per job site and located less than 30 m from activities. Personnel to be trained for its use as to respond to environmental emergencies.
- .3 Emergency response kit to minimally include, but not be limited to, appropriate equipment and devices to contain spill as to minimize the risk of the spread of contamination caused by a hydrocarbon, hazardous material or other contaminant spill. The emergency response kit, identified as “URGENCE – ENVIRONNEMENT/EMERGENCY - ENVIRONMENT”, to include:
 - .1 One (1) sorbent boom (dia: 3 in, length: 12 ft);
 - .2 One (1) sorbent boom (dia: 3 in, length: 4 ft);
 - .3 Twenty-five (25) sorbent pads;
 - .4 Two (2) 7-litre spill absorbent bags (Sphagnum peat moss);
 - .5 One (1) epoxy stick;
 - .6 Two (2) DANGER signs;
 - .7 Three (3) plastic recovery bags;
 - .8 TDG (Transportation of Dangerous Goods) self-adhesive labels (Class 4.1);
 - .9 One (1) permanent marker;
 - .10 Two (2) pairs of rubber gloves;
 - .11 Two (2) pairs of safety goggles;
 - .12 Adhesive tape (“Duct Tape”);
 - .13 Some tools: cutting pliers and screwdriver;
 - .14 “Environmental Incident Report” forms, as provided by the Departmental Representative.
- .4 Contractor to promptly report spill to Departmental Representative, no matter the amount spilled.
- .5 Contractor to report every spill to the following authorities: Environment Canada’s Emergency Service (1-866-283-2333) and Quebec’s Urgence-Environnement (1-866-694-5454).
- .6 Recover contaminated materials, when necessary, and evacuate to an organization approved by the MELCC.
- .7 Contractor will be held responsible for any spill of a product deemed damaging to the environment, and if applicable, Contractor shall immediately carry out, at its expense, the corrective measures prescribed by the Departmental Representative.
- .8 In the case of failure to adequately respond to the satisfaction of Departmental Representative due to the magnitude or type of spill, additional response costs requiring personnel or machinery from another contractor, will be charged to the Contractor.
- .9 Response report: in the case of a response, Contractor shall complete without delay the event declaration form (Environmental Incident Report, provided by the Departmental Representative), and give it to the Departmental Representative.

- .10 The Incident Report shall be submitted at the preliminary meeting before the beginning of the work.
- .11 Content of emergency response kit to be renewed immediately after a spill.

1.19 TEMPORARY STORAGE OF HAZARDOUS PRODUCTS

- .1 Hazardous products shall be gathered up in islets separated by a horizontal distance of 1 m. Incompatible products shall be separated by a horizontal distance of 3 m.
- .2 Temporary storage of hazardous products within the work area on Île aux Plaines is only permitted in the containment basin installed for this purpose in accordance with a procedure submitted and approved by the Departmental Representative.
- .3 Contractor to take all necessary measures so containers, portable and mobile tanks he uses comply with fabrication standards specified in the Petroleum Products Regulation (RSQ, c. P-29, r.2).
- .4 Portable tanks will need to meet road and Transport Canada standards. The tanker truck will need to be grounded during the transfer of fuel. The refuelled vehicle or the reservoir shall be connected to the tanker truck by a ground cable, ensuring that contact has been established on bare metal.
- .5 Under no circumstances can the operator wander off during refuelling of the vehicle/tank.
- .6 Rain water to be regularly drained. Protect the storage area as to prevent accumulation of rain water.
- .7 Containers with flammable and combustible fluids must be stored vertically.
- .8 Containers that are in poor condition must be disposed of immediately outside of construction areas and site of Canada, in accordance with the most restrictive environmental standards. The containers must be identified according to the WHMIS.
- .9 Temporary storage of hazardous materials must indicate the risks with TDG (Transportation of Dangerous Goods) labels.
- .10 Store and handle hazardous material and waste (residual hazardous materials) in accordance with federal and provincial governments' acts, regulations, codes and guidelines. Keep on site up-to-date record of stored materials.
- .11 Provide Departmental Representative with a copy of the residual hazardous materials (RHM) record at each meeting.

1.20 RECREATIONAL ACTIVITIES

- .1 Contractor to issue public notices as to keep the population informed of work stages which affect the aquatic environment in order to limit disruption of recreational fishing, hunting and navigation. For instance, signs shall be installed at the various access points to the water within the project area.
- .2 Contractor to issue Notices to Shipping as to inform recreational boaters of work. Contractor to ensure the issue and monitoring of Notices to Shipping describing work activities, equipment characteristics and work location. Provide Canadian Coast Guard with this information (telephone: 1-418-233-2308, or email: opsavis@dfo-mpo.gc.ca) at least twenty-four (24) hours before start of work for issuance of the Notice to Shipping.

- .3 The St. Lawrence Seaway should not be impeded during Work.
- .4 Contractor to clearly mark out the work area with buoys and floating signs, where considered relevant, which announce the work area.
- .5 Contractor to provide 24/7 access to Canadian Coast Guard teams responsible for waterway marking. Dates for marking are usually between May 15th and June 15th, and after October 15th for removal.
- .6 Contractor to comply with any other requirements by Transport Canada.

1.21 ARCHAEOLOGY

- .1 Special conditions
 - .1 Archaeological items may be found during excavation work related to the construction of the various structures. Such work is subject to this section.
 - .2 Access and cooperation
 - .1 An archaeologist to be present for the entire duration of planting work (grassbeds, shrub and treed swamps). Departmental Representative to pay for services of the Archaeologist.
 - .1 Contractor to notify Departmental Representative at least fifteen (15) working days before start of work which is to be supervised by Archaeologist;
 - .2 Failure to comply with this deadline shall result in no compensation to the Contractor for non-availability of an Archaeologist and the obligation to wait before proceeding with work. Planting dates must still be complied with.
 - .2 Contractor to cooperate and comply with all guidelines of Departmental Representative or Archaeologist during excavation work to prevent loss of archaeological information on site;
 - .3 Contractor to provide access to work and cooperate with the Archaeologist. The Archaeologist, or his representative, shall be on duty on the worksite in accordance with requirements for the protection and record of archaeological items. Their role is to prevent the loss of archaeological information and to gather information regarding archaeological resources;
 - .4 Contractor to allow the team of archaeologists to conduct archaeological assessments and surveys and to cooperate with them to facilitate their work.
 - .3 Archaeological Finds
 - .1 If archaeological items which demand a more advanced expertise on the part of the team of archaeologists are discovered, Contractor to continue work outside the area set out by the relevant authorities, at no additional cost nor extension of deadline;
 - .2 If discoveries are made during work in the absence of the Archaeologist, or his representative, the following measures must be complied with:
 - .1 Contractor to notify Departmental Representative of any archaeological discovery (remains of structures or buildings, objects and fragments of

objects) made on the premises and wait for his instructions before proceeding with work where the discovery was unearthed;

- .2 Remains, antiques and other items of historical, archaeological or scientific interest (remains, object or fragments of object) discovered on site or in areas to be excavated or demolished remain the property of Canada. Contractor to protect such discoveries and receive guidelines from the Departmental Representative to that extent.

1.22 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 or specifications.
- .2 Contractor: after receipt of such notice, inform Departmental Representative of proposed corrective action and take such action for approval by Departmental Representative.
 - .1 Take action only after receipt of written approval by Departmental Representative.
- .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.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 SITE RESTORATION

- .1 Contractor shall restore the beds and shoreline of aquatic environments affected by the work to their original state (substrate grain size, bed profile, etc.) following the dismantling of the temporary and permanent structures and over the entire affected areas located outside the right-of-way of the permanent structures and transshipment site.
- .2 When removing temporary jetties, Contractor shall randomly leave 700-900 mm blocks, i.e. 5 blocks within the East jetty right-of-way and 10 blocks within the West jetty right-of-way. Contractor to validate specifics of work with Departmental Representative before proceeding.
- .3 Contractor shall restore the ditches damaged by machinery (damage to gradient, embankment shoulders, etc.).
 - .1 Clean site in accordance with Section 01 74 11 – Cleaning.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 01 29 83 – Payment Procedures for Testing Laboratory Services.
- .2 01 33 00 – Submittal Procedures.
- .3 01 56 00 – Temporary Barriers and Enclosures.
- .4 31 32 19.16 – Geotextile Soil Stabilization.
- .5 32 92 19.13 – Mechanical Seeding.
- .6 32 93 10 – Trees, Shrubs and Ground Cover Planting.
- .7 35 31 19 – Revetments.
- .8 Other applicable sections.

1.2 REFERENCES

- .1 Latest edition of each standard cited in the various sections is part of the Specification within the specified limits.
- .2 ASTM International
 - .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 D499: Evaluation of Rock to be Used for Erosion Control;
 - .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.
- .3 Agriculture and Agri-Food Canada
 - .1 Plant Hardiness Zones in Canada (latest version).
- .4 Canadian Nursery Landscape Association (CNLA)
 - .1 Canadian Standards for Nursery Stock (latest version).
- .5 Bureau de normalisation du Québec
 - .1 NQ 0605-100/2001: Aménagement paysager à l'aide de végétaux;
 - .2 NQ 0605-300/2001: Produits de pépinières et de gazon.

1.3 LAND 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, in writing, five (5) working days before the expected inspection date, requesting inspection if Work is designated for special tests, inspections or approval 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 approval 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 not to be in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay costs of examination and correction.

1.4 INDEPENDENT INSPECTION AGENCIES

- .1 Independent Inspection/Testing Agencies will be engaged by Departmental Representative for the purpose of inspecting and/or testing portions of Work as part of the Project's Quality Assurance. Cost of such services will be borne by Departmental Representative.
- .2 Allow testing and inspection organizations access to site and fabrication/shaping workshops located outside the worksite.
- .3 Collaborate with the above-mentioned organisations and take all reasonable measures so they possess the required means of access in all safety.
- .4 Provide equipment required for executing inspection and testing by appointed agencies.
- .5 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .6 If defects are revealed during inspection and/or testing, Departmental Representative will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative. Pay costs for retesting and reinspection.

1.5 PROCEDURES

- .1 Notify appropriate agency and Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.
- .2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence not to cause delays in Work.
- .3 Provide labour, means, and facilities to obtain and handle samples and materials on site, or on production site. Provide sufficient space to store and cure test samples.

1.6 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Requirements are specified in Section 01 33 00 – Submittal Procedures, and specific specifications sections.

1.7 QUALITY CONTROL OF STONES TO BE STOCKPILED

- .1 Requirements regarding the quality control of stones to be stockpiled are specified in Section 35 31 19 – Revetments.
- .2 Contractor to pay for the quality control of stones to be stockpiled.
- .3 Submit the following information to the Departmental Representative in accordance with requirements of Section 01 33 00 – Submittal Procedures.

.1 Information on the Sources of Stones

- .1 Contractor to submit the following information within twenty (20) working days after award of contract for every source proposed:
 - .1 Name and location of quarry;
 - .2 Sector and heights of quarry to be mined;
 - .3 Specific strata or facies to use;
 - .4 Results of all required laboratory tests on samples that are representative of each facies found in the quarry where stone will be extracted and that were conducted specifically for this project;
 - .5 Quarry's MELCC certification;
 - .6 List of marine structures which have already been built using the same stone;
 - .7 In case of conglomerate, information to be provided to also include the age of the geological formation.

.2 Stone and Personnel Management Plan

- .1 Contractor to submit written stone management plan within ten (10) working days after award of contract. Plan to indicate the means, methods and equipment planned for the production, handling, transportation and placement of stone, as well as for the inspection and monitoring to ensure a satisfactory stone quality.
- .2 The management plan submittal to include the name and qualifications of the supervisor and of a certified geologist (or geological engineer).

.3 Preproduction Stones

- .1 Contractor to submit a set of preproduction stones within twenty-five (25) working days after award of contract for assessment at the source by the Departmental Representative. At least twenty-five (25) preproduction stones to be provided for each category of stone to be produced at each source.

.4 Stone and Personnel Management Plan Review

- .1 Should the Contractor choose to present a proposal for the revision of the stone management plan, he must submit the proposed revision no later than five (5) days before the date when he plans to implement the revision. Contractor must not implement the revision before it has been

reviewed and approved by the Departmental Representative. Proposed modifications to the personnel must also be submitted for review.

.5 Stone Management Plan Reports

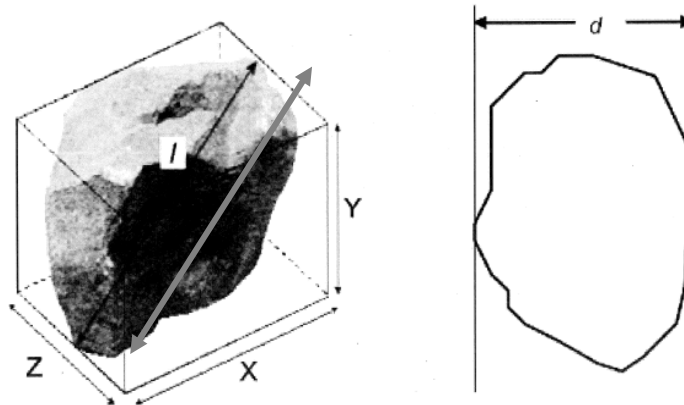
- .1 Contractor to keep daily reports of all work conducted within the framework of the approved stone management plan. Such reports to be available for review by the Departmental Representative upon request. These reports must be combined at the end of every week and submitted to the Departmental Representative on a weekly basis. Daily reports to be written by each inspector and include the following information:
 - .1 Name of inspector;
 - .2 Identification of stone handling equipment for all work phases and names of operators which prepared the stones for inspection;
 - .3 Date of stone inspection;
 - .4 Weather conditions, including temperature;
 - .5 Weather conditions and date when the stone was extracted from the quarry face. Date and specifics of blasting, if applicable;
 - .6 Location and facies found in the quarry where stone break down occurred (horizontally and vertically);
 - .7 Colours and characteristics used by the inspector for aerosol paint markings and relevant code for stones sorted individually (not mechanically) and for rejected stones;
 - .8 Distribution of the approximate amount, per category, of accepted and rejected stones throughout the day;
 - .9 A summary of the causes of rejection throughout the day;
 - .10 Total amount of stones shipped, per category, from the source as of the writing of the report.

.6 Sieve Analyses

- .1 Submit all sieve analysis results for review, including test data sheets, calculations and graphic representation of results.

1.8 TERMINOLOGY

- .1 Here are the definitions of the following terms:
 - .1 Tonne (t): refers to the metric tonne (1 t = 1,000 kg);
 - .2 Dimensional ratio (l/t): relation between the maximum length (l) and minimum thickness (t) measured between the two closest parallel lines through which the stone can pass;



- .3 Facies 1): category into which a rock can be classified and which is determined by one or several similar lithological characteristics;
- .4 Conglomerate 1): sedimentary rock composed of at least 50% rock debris exceeding 2 mm in size and held together by cementing material.

1.9 REJECTED WORK

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

1.10 REPORTS

- .1 Submit one (1) copy (hard and electronic) of inspection and test reports to Departmental Representative.
- .2 Provide copies to subcontractor of work being inspected or tested.

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 01 35 43 – Environmental Procedures.
- .2 01 74 11 – Cleaning.
- .3 Any other relevant section.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Submit general layout of site facilities, including accesses, detours and temporary roads, loading and unloading ramps and installations, fences, signage, etc. The general layout must contain all relevant information about facilities and for public safety and be submitted to Departmental Representative for approval.
- .3 Submit detail drawings of barge loading ramps and installations signed by Engineer.
- .4 Submit drawings of site and road signs for visitors.
- .5 Submit all documents requested in the present section or required by applicable laws and regulations.

1.3 CONSTRUCTION SIGNAGE

- .1 Provide and erect project sign (plan attached), within three (3) weeks of signing Contract, in a location designated by Departmental Representative.
- .2 No other signs or advertisements, other than warning signs, are permitted on site.
- .3 Provide project identification site sign comprising foundation, framing and one 1,200 x 2,400 mm signboard as detailed and as described below. Drawing with accurate dimensions of signboard shall be provided to Departmental Representative after award of Contract.
 - .1 Foundations: 15 MPa concrete to CSA-A23.1 minimum 200 mm x 900 mm deep or posts buried in the ground;
 - .2 Framework and battens: wooden framework, 89 mm x 140 mm;
 - .3 Signboard: Medium density overlaid Douglas Fir plywood to CSA 0121;
 - .4 Paint: alkyd enamel to CAN/CGSB-1.59 over exterior alkyd primer to CAN/CGSB 1.189;
 - .5 Fasteners: hot-dip galvanized steel nails and carriage bolts;
 - .6 Vinyl sign face: printed project identification, self-adhesive, vinyl film overlay, supplied by Departmental Representative.
- .4 Locate project identification sign where indicated by Departmental Representative and construct as follows:
 - .1 Build concrete foundation, erect framework, and attach signboard to framing;

- .2 Paint surfaces of signboard and framing with one coat primer and two coats enamel. Colour white on signboard face, black on other surfaces;
- .3 Apply vinyl sign face overlay to painted signboard face in accordance with installation instruction supplied.
- .5 Direct requests for approval to erect Consultant/Contractor signboard to Departmental Representative. For consideration general appearance of Consultant/Contractor signboard must conform to project identification site sign. Wording in both official languages.
- .6 Signs and notices for safety and instructions in both official languages. Graphic symbols to CAN/CSA-Z321.
- .7 Maintain approved signs and notices in good condition for duration of project, and dispose of off site on completion of project or earlier if directed by Departmental Representative.

1.4 INSTALLATION AND REMOVAL

- .1 Provide construction facilities in order to execute work expeditiously.
- .2 Remove from site all such work after use.
- .3 Site preparation and restoration at the Contractor's expense.

1.5 SITE STORAGE/LOADING

- .1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
- .2 Do not load or permit to load any Work or machinery with weight or force that will endanger Work.
- .3 All storage areas, within or outside the work right-of-way, must first be approved by the Departmental Representative. The Contractor shall submit its needs in writing, indicating the locations of affected routes and sectors on one or more sketches.
- .4 Once the work is done, dismantle the storage areas and restore affected lands to its original condition to the satisfaction of the Departmental Representative.

1.6 CONSTRUCTION ACCESS AND PARKING

- .1 Parking is permitted on site, within work right-of-way, provided it does not disrupt the Work or interfere with the movement of vehicles.
 - .1 Overnight parking of equipment or machinery at the Contractor area developed on each jetty is tolerated, but must first be approved by Departmental Representative. Weather conditions must also be taken into account;
 - .2 Workers and visitors to park their vehicles in the intended parking area at the entrance of the transshipment site as shown on plan C202.
- .2 Site access:
 - .1 The transshipment site can be reached from Road 132 (Melocheville Boulevard) as specified on plan C202;

- .2 The two (2) work areas on Île aux Plaines can be reached by boat from the barge access area specified on plan C202. Contractor to be responsible for compliance with the Navigation Code for the duration of Work to reach the projected work site.
- .3 All temporary access roads outside the working widths indicated on the plans must be approved in advance by the Departmental Representative. The Contractor shall accordingly submit its needs in writing, by indicating the locations of the routes and zones affected on one or more sketches.
- .4 Once the work is done, dismantle access roads and temporary parking lots and restore the land to its original condition to the satisfaction of the Departmental Representative.
- .5 The Contractor must at all times ensure suitable and safe access to the site, to the satisfaction of the Departmental Representative, for emergency vehicles (fire fighters, police, ambulance, etc.).
- .6 If the Contractor is allowed to use existing roads to get to the site, ensure their maintenance throughout the entire project, repair any possible damage to them and make sure the road is cleaned regularly and at the request of Departmental Representative.

1.7 FENCE, BARRIERS AND SIGNAGE

- .1 Transshipment Site:
 - .1 Erect site fence around the transshipment site. Fence to be minimally 2 m in height in order to properly delineate the work area. Provide one (1) lockable access barrier for trucks and a separate pedestrian access;
 - .2 Install lockable access barriers at every pedestrian, truck and site vehicle access. Install a “no-entry” sign at each barrier with safety instructions (wearing individual protective equipment) for authorized personnel only;
 - .3 Develop pedestrian corridor, when pedestrian access, or other, is possible, with temporary fencing composed of new snow fence (height: 1.2 m) fastened to T-profile posts with metal wire. Posts to be spaced 2.4 m on centre. A fence shall be erected at the following locations, but not limited to:
 - .1 Perimeter of the transshipment site;
 - .2 Pedestrian traffic corridor between parking area and trailers;
 - .3 Perimeter of the worker and visitor parking area.
 - .4 Install fences around trees and plants to be left in place as to protect them against damage which could be caused by equipment used or by certain construction practices.
- .2 Île aux Plaines:
 - .1 Install all necessary signage to prevent unauthorized access to work site. Signage to include, but not be limited to:
 - .1 Regulatory signage;
 - .2 Signage and advance signage: Work in progress – Visitor access is not permitted;
 - .3 Other signage as requested by Departmental Representative when public safety is a concern.

1.8 JOB SITE TRAILERS

- .1 Transshipment site on plan C202 designates an area for job site trailers and certain storage needs.
- .2 Provide office heated to 22 degrees C, lighted 750 lx and ventilated, of sufficient size to accommodate site meetings for 8 people, furnished with drawing laydown table as well as the office of the Departmental Representative. The trailer must be connected to a 115/230 V power supply.
- .3 Provide marked and fully stocked first-aid case in a readily available location.
- .4 Subcontractors to provide their own offices as necessary. Direct location of these offices.
- .5 A site trailer shall be installed at the Contractor area next to the jetties.
- .6 Departmental Representative's trailer:
 - .1 Provide temporary office for Departmental Representative;
 - .2 Inside dimensions minimum 4.5 m long x 3 m wide x 2.4 m high, as well as an adjoining 3.6 m-wide office that is the same width as the main office, with floor 0.5 m above grade, complete with four 50% opening windows and one lockable door. Both offices must be connected to a 115/230 V power supply;
 - .3 Insulate building and provide heating and air-conditioning system to maintain 22 degrees C inside temperature at -20 degrees C outside temperature;
 - .4 Finish inside walls and ceiling with plywood, hardboard or wallboard and paint. Finish floor with 19 mm thick plywood;
 - .5 Install electrical lighting system to provide min 750 lx using surface mounted, shielded commercial fixtures with 10 % upward light component;
 - .6 Equip office with 1 x 2 m table, 1.2 x 2.4 m table, 10 chairs, a wheeled office chair, a trash can, a water dispenser that the Contractor will ensure is supplied with drinking water, 6 m of shelving 300 mm wide, three (3 drawer) filing cabinets, one (1) plan rack and one coat rack and shelf;
 - .7 Departmental Representative's office must be equipped with a telephone line, a fax/copying machine and a high-speed internet connection for exclusive use of Supervisor;
 - .8 Provide washroom facilities for Departmental Representative's exclusive use adjacent to the office.
 - .1 Lavatory to be equipped with separate urinal, pedal sink with water storage for hand washing, hand soap and paper towel distributors. Ensure supply of paper towels and toilet tissues;
 - .2 Lavatory to be insulated and heated.
 - .9 Maintain in clean condition.

1.9 JOB SITE TRAILER POWER SUPPLY

- .1 Power supply must be provided by the site Owner. The Contractor should anticipate the cost of installing/removing and connection of temporary overhead service wires between the trailers and the power supply, as well as any temporary poles, to ensure a safe overhead clearance and all other work involved in providing the trailers with power.

- .2 Contractor to pay for energy costs established at \$200/month. Contractor to also be responsible for production of temporary requests to Departmental Representative for connection and disconnection.
- .3 Contractor to obtain Departmental Representative's approval of the projected route for overhead/underground power lines from the power supply and the trailers.
- .4 Electrician to be responsible for installation of generators at Île aux Plaines sites.

1.10 EQUIPMENT, TOOL AND MATERIAL STORAGE

- .1 Provide and maintain close to construction site trailers, 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.
- .3 Departmental Representative will not provide any security guard services. The Contractor is responsible for any theft or damages that occurs on the site.

1.11 SANITARY FACILITIES

- .1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.
 - .1 Provide sanitary facilities for the transshipment site;
 - .2 Provide sanitary facilities for the Contractor area located on the shores of Île aux Plaines.
 - .1 Facilities must be anchored such that they cannot be easily moved;
 - .2 Either provide protection against waves along the perimeter of the facilities or raise the installations of 1 m with comparison to the elevation of the Contractor area.
 - .3 Portable lavatories to be equipped with separate urinal, pedal sink with water storage for hand washing, hand soap and paper towel distributors;
 - .4 Each lavatory to be insulated and heated.
- .2 Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.12 PROTECTION AND MAINTENANCE OF TRAFFIC

- .1 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.
- .2 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.
- .3 Dust control: adequate to ensure safe operation at all times.
- .4 Lighting: to assure full and clear visibility for full width of haul road and work areas during night work operations.
- .5 Provide snow removal during period of Work.

- .6 Provide suitable signage at intersection with Road 132 to signal trucking in the area.
Signage to comply with standards of MTQ's Tome V – Signalisation routière.

1.13 FLOATING EQUIPMENT

- .1 Contractor to supply equipment of sufficient size and capacity for work specified on drawings and specifications.
- .2 Maintain all machinery in good operating condition for the duration of Contract. Quickly and properly repair damaged machinery at all times. Equipment used to be in good operating condition and be able to navigate on intended body of water. Equipment to be suitable for execution of Work by its very dimensions, characteristics and draught.
- .3 Mark the floating equipment using signal lights in accordance with Canada Shipping Act (2001).
- .4 Ensure marine band radio aboard.
- .5 Install and keep buoys and signal lights functional for all duration of Contract.
- .6 Keep all mandatory signals and lights installed on the floating equipment functional in accordance with the Collision Regulations and Navigation Safety Regulations. All equipment necessary for Work to be properly identified and/or visible at all times.

1.14 CLEANING

- .1 Remove construction debris, waste materials, packaging material from work site daily.
- .2 Clean dirt or mud tracked down 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.
- .5 Refer to Section 01 74 11 – Cleaning.

1.15 TRUCK SCALE

- .1 A truck scale is available on site for occasional use. Contractor will have access to the scale at a cost of \$20 per weighing.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

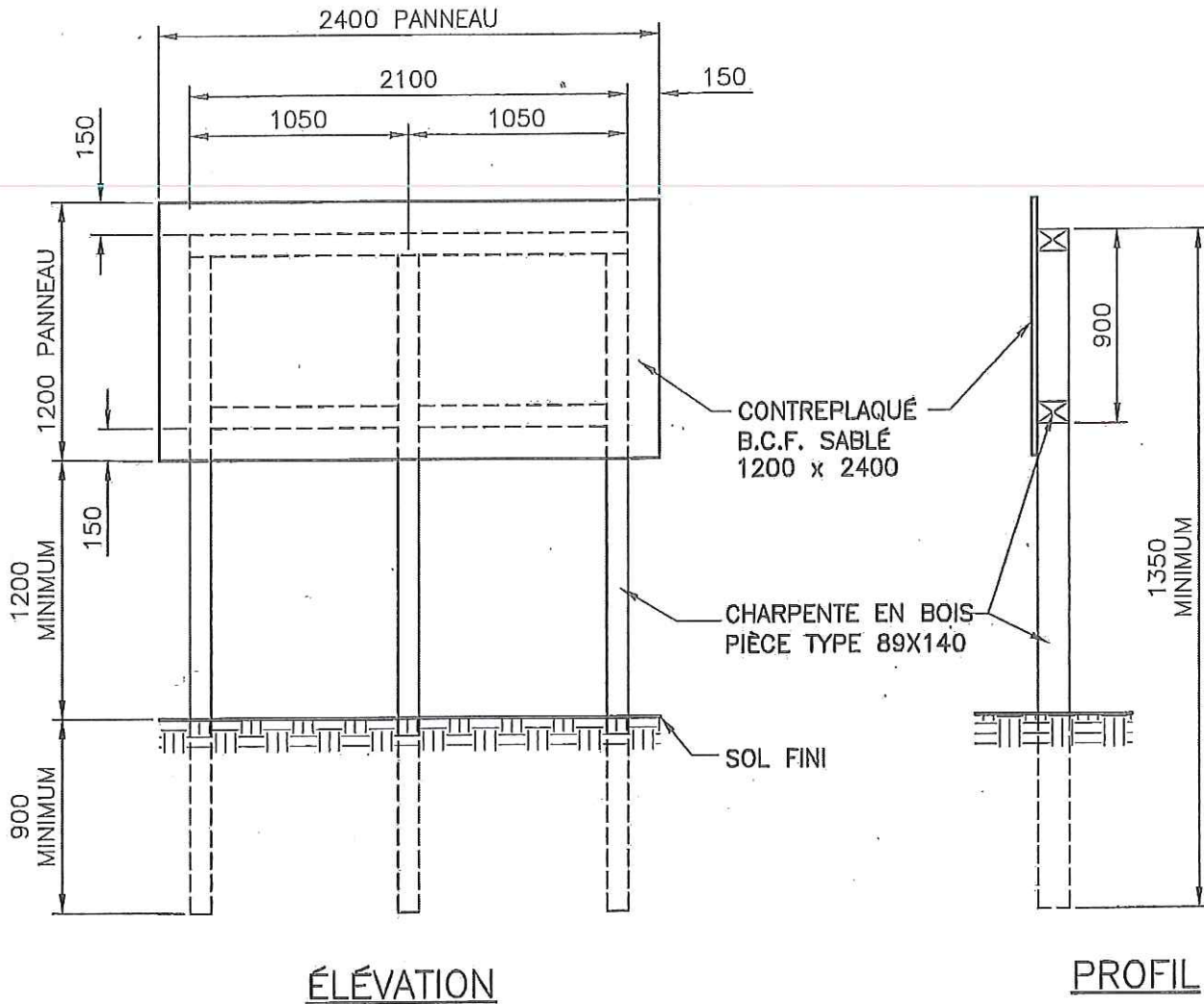
Part 3 Execution

3.1 NOT USED

- .1 Not Used

END OF SECTION

LE PANNEAU DE BOIS DE 1200 x 2400 ET TOUTE
LA CHARPENTE DE BOIS EN 89 x 140mm SERONT
FOURNIS ET INSTALLÉS PAR L'ENTREPRENEUR.



* ON DEVRA CONSULTER LE DEVIS
SECTION 01 52 00 INSTALLATIONS DE CHANTIER
TOUTES LES COTES SONT EN MILLIMÈTRES

Travaux publics et
Services gouvernementaux
Canada

Région du Québec
Équipe services clients
Patrimoine

Public Works and
Government Services
Canada

Quebec Region
Client Services Team
Heritage

Canada

Projet/Project

Titre du dessin/Drawing title:

PANNEAU DE CHANTIER

conçu par/designed by:

date:

DATE

approuvé par/approved by:

date

DATE

dessiné par/drawn by:

date:

DATE

no. de projet/project no.

date

révisions:

échelle/scale:

AUCUNE

nom du fichier/file name

PANNEAU_X-496_PANEL

AutoCAD

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 01 52 00 – Construction Facilities.
- .2 01 74 11 – Cleaning.
- .3 31 23 33.01 – Excavating, Trenching and Backfilling.
- .4 35 31 19 – Revetments.
- .5 Any other applicable section.

1.2 REFERENCE

- .1 Appendix 3 presents site hydrodynamic conditions and water level statistics.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Submit a general layout of all temporary structures required for the execution of Work, including temporary jetties, temporary access roads on breakwaters, shore access, temporary roads on the shore, as well as temporary developments required at the stone transshipment site. Specific details of each structure must also be provided to the Departmental Representative for approval. General layout and specific details to:
 - .1 Take into account site hydrodynamic conditions and water level statistics presented in Appendix 3;
 - .2 Include all relevant information regarding facilities and public safety;
 - .3 Specify scheduled sequence of activities for the erection and removal of the various structures.
- .3 Submit any other document requested in this section or required by Departmental Representative or applicable laws and regulations.

1.4 INSTALLATION AND REMOVAL

- .1 Provide temporary controls in order to execute Work expeditiously.
- .2 All controls laid down or accidentally dropped outside work right-of-way must be recovered and then included in the projected structures or removed from site to Contractor's expense.
- .3 Disassemble controls and install permanently or remove from site all such work after use, as appropriate.

1.5 ACCESS TO SITE

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

1.6 SITE ACCESS MANAGEMENT

- .1 Install signage indicating site and nature of Work.
 - .1 Provide terrestrial signage near stone transshipment site;
 - .2 Provide floating signage near Île aux Plaines and buoyage of the transshipment ramp at the stone transshipment site.

1.7 PUBLIC TRAFFIC FLOW

- .1 Provide appropriate signage on Road 132 near the stone transshipment site;
- .2 Provide and maintain competent and trained signal flag operators, traffic signals, barricades and flares, lights, or lanterns as required to safely perform Work and protect public.

1.8 FIRE ROUTES

- .1 Maintain access to property (stone transshipment site) including overhead clearances for use by emergency response vehicles.

1.9 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

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

1.10 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate construction materials used in temporary structures for reuse in other temporary structures or for off-site disposal, as appropriate, in accordance with Section 01 74 21 – Waste Management and Disposal.

Part 2 Products**2.1 NOT USED**

- .1 Not Used.

Part 3 Execution**3.1 TEMPORARY JETTIES AND WORK AREAS**

- .1 Two (2) temporary jetties are projected for access to both work sites on Île aux Plaines, one (1) jetty for the East site and one (1) jetty for the West site.
- .2 Construction of both jetties to comply with baseline shown on drawings.
- .3 Jetty geometry to allow safe docking of barge and traffic of machinery.
- .4 Contractor to determine jetty road surface elevation, which must consider water level during Work period. Minimum freeboard of 1,000 mm, which corresponds to the vertical

distance between the final road surface elevation and the water level elevation, is required at all times.

- .5 Two (2) work areas connected to each jetty are also projected in accordance with drawings.
 - .1 Maximum permissible footprint for the East work area: 1,315 m²;
 - .2 Maximum permissible footprint for the West work area: 1,260 m².
- .6 Rock fill to be used for construction of jetties. No particles smaller than 50 mm will be tolerated in the fill material. Contractor to decide of grading and consider anticipated hydrodynamic stress (refer to Appendix 3).
- .7 Turbidity curtain to be kept in place during construction and removal of each jetty. At least 50 m (in length) of turbidity curtains must be installed prior to start of jetty backfilling and at least 15 m of curtains before jetty extension.
- .8 Submit in writing the construction method with plan signed and sealed by engineer to Departmental Representative for approval prior to execution of Work.
- .9 Temporary jetties to be removed once their use is no longer necessary.
 - .1 Materials used for construction of first temporary jetty can be reused for construction of the second temporary jetty;
 - .2 All materials must be removed from site and disposed of at suitable site, at Contractor's expense;
 - .3 Removal to make it possible to reach level as close as possible to initial level of surveyed lake bottom prior to Work without, however, having to excavate or resuspend sediments and over digging the riverbed. Method used by Contractor must allow maximum recovery of materials and limit impact on existing natural soil and suspension of fine particles;
 - .4 Contractor to leave scattered rocks/boulders across the river bottom when removing jetties as specified on drawing provided by Departmental Representative.
- .10 Submit work method in writing to Departmental Representative and in accordance with Section 01 35 43 – Environmental Procedures. Work method to be approved by Departmental Representative prior to execution of Work.

3.2 TEMPORARY ROADS ON PROJECTED BREAKWATERS

- .1 Temporary road to be built on each projected breakwater string to allow access to their ends for placement of armour stones without having to enter the water.
- .2 Geotextile to be placed over the entire projected structure right-of-way beforehand in accordance with Section 31 32 19.16 – Geotextile Soil Stabilization.
- .3 Only granular material tolerated for this structure is 50-200 mm angular stones in accordance with Section 35 31 19 – Revetments.
- .4 Temporary road geometry must allow safe machinery traffic.
 - .1 Geometry shown on drawings is for information purposes only. Contractor to be responsible for sizing of temporary accesses;

- .2 Road surface elevation to consider water level at time of Work. Minimum freeboard of 300 mm, which corresponds to the vertical distance between the final road surface elevation and the water level elevation, is required at all times.
- .5 Turbidity curtain parallel to breakwater axis is required prior to placement of material in water in accordance with criteria specified in Section 01 35 43 – Environmental Procedures. At least 30 m (in length) of turbidity curtains must be installed prior to backfilling and at least 15 m of curtains before breakwater extension. Curtain to be either anchored to shore or to breakwater section already built.
- .6 Temporary roads to be removed as armour stone placement work progresses.
 - .1 Dismantle and remove 50-200 mm angular stones from the top layer;
 - .2 Spread and shape 50-200 mm angular stones to form the filter stone layer in accordance with construction profile shown on drawings.
- .7 Water level during construction period is closely linked to the quantity of 50-200 mm angular stones required for construction of temporary roads. All 50-200 mm angular stones in excess of required volumes for projected permanent structures (filter stones for breakwaters and shore nourishment) must be disposed of off-site at suitable site, and at Contractor's expense.
- .8 Work method to be submitted and in line with Section 01 35 43 – Environmental Procedures. Method to be approved by Departmental Representative prior to Work execution.

3.3 SHORE ACCESS

- .1 Access roads are required to access the shore from jetties and/or from temporary roads built on the projected breakwater axis. These roads must be constructed with 50-200 mm angular stones.
- .2 The number of accesses depends on the work method used by Contractor. However, the footprint (lake bed) of these temporary accesses is limited for each site:
 - .1 Surface area computed from the inner toe of the breakwater to the limit of the shore nourishment. Therefore, areas where shore nourishment comes closer to the breakwater should be prioritized;
 - .2 Maximum admissible footprint for the West sector: 640 m²;
 - .3 Maximum admissible footprint for the East sector: 765 m².
- .3 Accesses to shore must be completely removed prior to planting of grass beds.
 - .1 Removal to make it possible to reach initial level of surveyed lake bottom prior to Work without, however, having to excavate sediments and over dig the lake bed. Method used by Contractor must allow maximum recovery of materials and limit impact on existing natural soil and suspension of fine particles.
- .4 Work method to comply with Section 01 35 43 – Environmental Procedures. Submit in writing for approval to Departmental Representative. Departmental Representative to have five (5) working days to decide of admissibility with Contractor.

3.4 TEMPORARY ROADS ON SHORE

- .1 The objective of the temporary roads on the shore is to allow traffic and transport of pebbles necessary for nourishment along the shore.
 - .1 Roads to be developed directly on the existing natural soil, but be located within Work right-of-way;
 - .2 Only dead, uprooted or fallen trees which interfere with structures can be cut and removed from site. No pruning or cutting of living tree or shrub is allowed. Partially uprooted, but still living, trees which are rather vertical must be left in place. Backfill the base of such trees with shore nourishment pebbles;
 - .3 Contractor to decide of road geometry, which must allow traffic of machinery without contact with Lake Saint-Louis waters;
 - .4 Minimum freeboard of 100 mm, which corresponds to the vertical distance between the final road surface elevation and the water level elevation, is required for all duration of Work.
- .2 If required quantities of 50-200 angular stones for shore nourishment are stored on shore, temporary roads on the shore can be extended and profiled in accordance cross-sections presenting shore nourishment. Placement of alluvial stones to be conducted after profiling of angular stones.
- .3 All 50-200 mm stones in excess of required volumes for projected permanent structures must be disposed of off-site at Contractor's expense.
- .4 Work method to be submitted and in line with Section 01 35 43 – Environmental Procedures. Method to be approved by Departmental Representative prior to Work execution.

3.5 MAINTENANCE OF TEMPORARY WORKS

- .1 Contractor to maintain temporary embankment surface clean until dismantlement and removal. Contractor to be responsible for accidents and damage to people, public or private properties, as well as vehicles. Contractor to correct settlement of structure and carry out other work necessary for maintenance of temporary structures or required by Departmental Representative.
- .2 Maintenance of temporary works crest elevation, where freeboard corresponds to the vertical distance between the crest elevation and the water level elevation:
 - .1 Minimum freeboard for temporary jetties: 1,000 mm;
 - .2 Minimum freeboard for temporary roads on breakwater: 300 mm;
 - .3 Minimum freeboard for shore accesses: 300 mm;
 - .4 Minimum freeboard for temporary roads on shore: 100 mm.
- .3 In case of emergency, or if Contractor fails to conduct repairs deemed necessary or requested via written notice by Departmental Representative, the latter may have work be conducted by third party at Contractor's expense.

3.6 TEMPORARY ACCESSES TO PLANTATION AREAS

- .1 Non-destructive temporary accesses are to be provided as to reach shrub and treed swamp planting areas by foot.

- .1 Construction of temporary roads is not allowed;
- .2 Use of ATV or machinery is not allowed, including small-sized machinery equipped with rubber tracks.
- .2 Contractor to provide for a work coordination in his methods as to utilize the temporary works and employ equipment not propelled by mechanical means (except airborne equipment), such as wheelbarrows to transport trees, shrubs, nestboxes or platforms to their respective planting site.
- .3 Work method to be submitted and in line with Section 01 35 43 – Environmental Procedures. Method to be approved by Departmental Representative prior to Work execution.

END OF SECTION

Part 1 General

- .1 01 45 00 – Quality Control.
- .2 01 56 00 – Temporary Barriers and Closures.
- .3 31 32 19.16 – Geotextile Soil Stabilization.
- .4 32 92 19.13 – Mechanical Seeding.
- .5 32 93 10 – Trees, Shrubs and Ground Cover Planting.
- .6 35 31 19 – Revetments.
- .7 Any other applicable section.

1.2 REFERENCES

- .1 Reference may be made to reference standards within test of each specifications section.
- .2 Conform to these reference standards as requested in specifications.
- .3 If there is question as to whether products or systems are in accordance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.

1.3 QUALITY

- .1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, provide evidence as to type, source and quality of products provided.
- .2 Procurement policy is to acquire, in cost-effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials or 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 compliance 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.
- .7 Contractor to ensure traceability of products provided and included in Works.

1.4 AVAILABILITY

- .1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are unavoidable, 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 properly protect them as to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Avoid storage of products directly on ground. Store products on crates or wood ties as to obtain minimum clearance of 100 mm from ground.
- .3 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.
- .4 Store products subject to damage from weather in weatherproof enclosures as to properly protect them.
- .5 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.

1.6 TRANSPORTATION

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

1.7 MANUFACTURER'S INSTRUCTIONS

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

1.8 QUALITY OF WORK

- .1 Ensure Quality of Work meets or exceeds compliance requirements specified in drawings and specifications, 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 dismiss from site workers deemed unfit, incompetent or careless.
- .3 Decisions as to standard or fitness of Quality of Work and skills of workforce 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 materials.

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 as to restore integrity of structures and sites. 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 All specification sections.

1.2 REFERENCES

- .1 Owner's identification of existing survey control points and property limits.
- .2 Departmental Representative's documents on which general and specific work limits are shown.

1.3 QUALIFICATIONS OF SURVEYOR

- .1 Qualified registered land surveyor, licensed to practise in Place of Work, acceptable to Departmental Representative.
- .2 Bathymetric surveys to be conducted by an independent firm specialized in hydrographic surveys and accepted by Departmental Representative. The Hydrographer must have the required qualifications and experience to operate equipment.

1.4 SURVEY REFERENCE POINTS

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

1.5 SURVEY REQUIREMENTS

- .1 Establish two (2) permanent bench marks per site referenced to established bench marks by survey control points. Record locations, with horizontal and vertical data in Project Record Documents. Provide a point dedicated to RTK-DGPS system. Forward one (1) copy of survey reference points to the Departmental Representative.
- .2 Establish lines and levels, locate and lay out, by instrumentation.
- .3 Stake boundaries for material placement and landscaping features.
- .4 Stake slopes and berms.
- .5 Stake axes of structures.

1.6 BATHYMETRIC REQUIREMENTS

- .1 Bathymetric surveys of the overall area must be conducted to obtain a XYZ point density of 1 point per 0.5 m (1 pt/0.5 m).
- .2 Real-time kinematic and differential GPS (RTK-DGPS).
- .3 Echosounder complying with accuracy criteria.
- .4 Altimetric accuracy of each XYZ survey point: 0.05 m. Planimetric accuracy of each XYZ point: 0.03 m.

1.7 EXCAVATOR REQUIREMENTS

- .1 Excavator to be equipped with RTK-DGPS system, or equivalent approved.
- .2 Altimetric accuracy: 0.05 m. Planimetric accuracy: 0.03 m.
- .3 Development and excavation work shall be subject to this requirement.

1.8 WORK LOCATION

- .1 Submit, when requested by Departmental Representative, site drawings specifying the location of various work in relation to one another.

1.9 RECORDS

- .1 Maintain a complete, accurate log of control and survey work as it progresses.
- .2 On completion of major site improvements, prepare a certified survey showing dimensions, locations, angles and elevations of Work.
- .3 Conduct a bathymetric survey within one (1) week before start of work and another survey within one (1) week after completion of Work. Produce certified drawing of elevations according to a 0.5 m x 0.5 m grid.
- .4 Site surveys by land and/or bathymetry are to be performed before and after work. Surveys must cover all temporary and permanent work footprints.

1.10 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit name, address and qualifications of Surveyor and Hydrographer to Departmental Representative.
- .2 Submit certificate signed by Surveyor and confirm elevations and coordinates of completed Work.
- .3 Submit certificate signed by Hydrographer and confirm bathymetric elevations and coordinates.
- .4 Submit a text file (TXT) for all XYZ data processed and validated.
- .5 Submit a CAD file.

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 01 35 43 – Environmental Procedures.
- .2 01 52 00 – Construction Facilities.
- .3 01 74 21 – Construction/Demolition Waste.

1.2 PROJECT CLEANLINESS

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, including that caused by Owner or other Contractors.
- .2 Remove waste materials from site daily, or dispose of, as directed by Departmental Representative. Do not burn waste materials on site.
- .3 Keep access roads free of ice and snow. Only pile up snow where indicated. Regularly dispose of snow off site.
- .4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of debris and waste material.
- .5 Provide suitable on-site containers.
- .6 Provide and use marked separate bins for recycling.
- .7 Dispose of waste materials and debris off site.
- .8 Store volatile waste in covered metal containers, and remove from premises at the end of each work day.
- .9 No hazardous residual materials (HRM) can be stored at the island sites. Provide a suitable transition location in accordance with the transshipment site regulations. Dispose of waste to a licensed site.

1.3 FINAL CLEANING

- .1 Final cleaning to allow restoration of site areas outside right-of-way of permanent structures to their original condition.
 - .1 Only “woody” materials (i.e. uprooted trees or shrubs located within the right-of-way of shore nourishment) may be disposed of on the Îles aux Plaines and in the surroundings of the work right-of-way, as directed by Departmental Representative.
- .2 When Work is substantially performed
 - .1 Remove materials used for construction of temporary structures which are not necessary for the construction of permanent structures. Contractor to pay for their removal from the site;
 - .2 Remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work;

.3 Remove waste products and debris and leave Work clean and according to initial condition.

.3 Prior to final review

.1 Remove surplus products, tools, construction machinery and equipment;

.2 Remove waste products and debris, including that caused by Owner;

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

.4 Remove snow and ice from access roads;

.5 Broom clean and wash paving surfaces (wood, concrete, asphalt) at the stone transshipment site.

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Remove granular material from site and dispose of in accordance with regulations in force and Section 01 74 21 – Waste Management and Disposal.

.2 Separate waste for recycling.

1.5 NOT USED

.1 Not Used.

Part 2 Execution

2.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 01 35 43 – Environmental Procedures.
- .2 01 52 00 – Construction Facilities.
- .3 01 56 00 – Temporary Barriers and Enclosures.
- .4 01 74 11 – Cleaning.
- .5 Any other applicable section.

1.2 WASTE MANAGEMENT GOALS

- .1 Prior to start of Work conduct meeting with Departmental Representative to review and discuss PWGSC's waste management goal and Contractor's proposed Waste Reduction Workplan for Construction, Renovation and/or Demolition (CRD) waste, as well as Residual Hazardous Materials (RHM) to be project generated.
- .2 PWGSC's waste management goal: to divert a minimum 75% of total Project Waste from landfill sites. Prior to project completion provide Departmental Representative documentation certifying that waste management, recycling, reuse of recyclable and reusable materials have been extensively practised.
 - .1 Target percentage goals are achievable for waste diversion. Contractor to review and confirm Departmental Representative's Waste Audit acceptable values.
 - .2 Minimize amount of non-hazardous solid waste generated by project and accomplish maximum source reduction, reuse and recycling of solid waste produced by CRD activities.
 - .3 Protect environment and prevent environmental pollution damage.

1.3 DEFINITIONS

- .1 Approved/Authorized recycling facility: waste recycler approved by applicable provincial authority or other users of material for recycling approved by the Departmental Representative.
- .2 Class III: non-hazardous waste - construction renovation and demolition waste.
- .3 Construction, Renovation and/or Demolition (CRD) Waste: Class III solid, non-hazardous waste materials generated during construction, demolition, and/or renovation activities.
- .4 Inert Fill: inert waste - exclusively asphalt and concrete.
- .5 Waste Source Separation Program (WSSP): implementation and co-ordination of ongoing activities to ensure designated waste materials will be sorted into pre-defined categories and sent for recycling and reuse, maximizing diversion and potential to reduce disposal costs.
- .6 Recyclable: ability of product or material to be recovered at end of its life cycle and remanufactured into new product for reuse.

- .7 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.
- .8 Recycling: process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- .9 Reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes:
 - .1 Salvaging reusable materials from remodeling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects;
 - .2 Returning reusable items including pallets or unused products to vendors.
- .10 Salvage: removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.
- .11 Separate Condition: refers to waste sorted into individual types.
- .12 Source Separation: act of keeping different types of waste materials separate beginning from the point they became waste.

1.4 REFERENCES

- .1 Ministère de l'Environnement et de la Lutte contre les changements climatiques (MELCC):
 - .1 Quebec Environment Quality Act;
 - .2 Quebec Regulation respecting hazardous materials;
 - .3 Regulation respecting the landfilling and incineration of residual materials.
- .4 Canadian Construction Association (CCA):
 - .1 CCA 81-2001: A Best Practices Guide to Solid Waste Reduction.
- .5 Public Works and Government Services Canada (PWGSC):
 - .1 2002 National Construction, Renovation and Demolition Non-Hazardous Solid Waste Management Protocol;
 - .2 CRD Waste Management Market Research Report (available from PARKS CANADA's Environmental Services);
 - .3 Sustainable Development Strategy 2017-2010.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Prepare and submit, once on a weekly basis throughout project or at intervals agreed to by Departmental Representative, the following:
 - .1 Receipts, scale tickets, waybills, and/or waste disposal receipts that show quantities and types of materials reused, recycled, or disposed of;
 - .2 Residual Hazardous Materials record;
 - .3 Written monthly summary report detailing cumulative amounts of waste materials reused, recycled and landfilled, and brief status of ongoing waste management activities.

- .3 Submit prior to final payment the following:
 - .1 Provide receipts, scale tickets, waybills, and waste disposal receipts that confirm quantities and types of materials reused, recycled or disposed of and destination.

1.6 USE OF SITE AND FACILITIES

- .1 Execute Work with minimal interference and disturbance to normal use of premises.
- .2 Maintain security measures established by facility provide temporary security measures approved by Departmental Representative.

1.7 WASTE PROCESSING SITES

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

1.8 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 do not 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.
- .5 Protect surface drainage, mechanical and electrical from damage and blockage.
- .6 Provide on-site facilities and containers for collection and storage of reusable and recyclable materials.
- .7 Separate and store materials produced during project in designated areas.
- .8 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated processing facilities.
 - .1 On-site source separation is recommended;
 - .2 Remove, co-mingled materials to off-site processing facility for separation;
 - .3 Obtain waybills, receipts and/or scale tickets for separated materials removed from site;
 - .4 Materials reused on-site are considered to be diverted from landfill and as such are to be included in all reporting.

1.9 DISPOSAL OF WASTE

- .1 Do not bury rubbish or waste materials on work site and Canadian government-owned land.
- .2 Do not dispose of hydrocarbons, waste, volatile materials, mineral spirits oil, paint, thinner, etc., into waterways, storm, or sanitary sewers.
- .3 Remove materials on-site as Work progresses.

1.10 SCHEDULING

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

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 APPLICATION

- .1 Do Work in compliance with the present specification.
- .2 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.

3.2 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 – Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 – Cleaning.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with present Section.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility;
 - .2 Source separate materials to be reused/recycled into specified sort areas.

3.3 DIVERSION OF MATERIALS

- .1 From following list, separate materials from general waste stream and stockpile in separate piles or containers, as reviewed by Departmental Representative, and consistent with applicable fire regulations.
 - .1 Mark containers or stockpile areas;
 - .2 Provide instruction on disposal practices.
- .2 On-site sale of waste material is forbidden.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 01 45 00 – Quality Control.
- .2 01 74 11 – Cleaning.
- .3 01 78 00 – Closeout Submittals.
- .4 Any other applicable section.

1.2 REFERENCES

- .1 General conditions of Contract.

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Acceptance of Work Procedures:
 - .1 Contractor's Inspection: Contractor and Subcontractors: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
 - .1 Notify Departmental Representative in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made;
 - .2 Request Departmental Representative's inspection.
 - .2 Departmental Representative's Inspection:
 - .1 Departmental Representative and Contractor to inspect Work and identify defects and deficiencies;
 - .2 Contractor to correct Work as directed.
 - .3 Completion Tasks: submit written certificates in French that tasks have been performed as follows:
 - .1 Work: completed and inspected for compliance with Contract Documents;
 - .2 Defects: corrected and deficiencies completed;
 - .3 Work: complete and ready for final inspection.
 - .4 Final Inspection:
 - .1 When completion tasks are done, request final inspection of Work by Departmental Representative, Owner, and Contractor;
 - .2 When Work incomplete according to Owner and Departmental Representative, complete outstanding items and request reinspection.
 - .5 Declaration of Substantial Performance (Certificate): when Departmental Representative considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance;

- .6 Commencement of Lien and Warranty Periods: date of Owner's acceptance of submitted declarations of Substantial Performance to be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work;
- .7 Final Payment:
 - .1 When Departmental Representative considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment;
 - .2 Refer to CCDC: when Work deemed incomplete by Departmental Representative, complete outstanding items and request re-inspection.
- .8 Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with contractual agreement.

1.4 FINAL CLEANING

- .1 Clean in accordance with Section 01 74 11 – Cleaning.
 - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.
- .2 Waste Management: separate waste materials for 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 REQUIREMENTS

- .1 01 33 00 – Closeout Submittals.
- .2 01 45 00 – Quality Control.

1.2 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-warranty Meeting:
 - .1 Convene meeting one (1) week prior to contract completion with Departmental Representative, in accordance with Section 01 31 19 – Project Meetings to:
 - .1 Verify Project requirements;
 - .2 Review warranty requirements of installation and products.
 - .2 Departmental Representative to establish communication procedures for:
 - .1 Notifying construction warranty defects;
 - .2 Determine priorities for type of defects;
 - .3 Determine reasonable response time.
 - .3 Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address.
 - .4 Ensure contact is located within local service area of warranted construction, is available, and is responsible to inquiries for warranty work action.

1.3 SECTION CONTENT – DOCUMENTS DO BE SUBMITTED AT WORK COMPLETION

- .1 Project file, samples, and specifications.
- .2 Shop drawings verified by the Departmental Representative.
- .3 Annotated as-built drawings and as-built land survey and bathymetry file.
- .4 Technical sheet, material, hardware, additional information.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Two weeks prior to Substantial Performance of the Work, submit to the Departmental Representative two (2) copies, in French, of the requested documents.
- .2 Soumettre les documents et les échantillons requis conformément à la section 01 33 00 – Documents/échantillons à soumettre et assumer les coûts de transport.
- .3 Provide replacement materials, products and equipment of same quality as products provided in Work.
- .4 Provide evidence, if requested, for type, source and quality of products supplied.
- .5 The Contractor must submit PDF and source files of all documents to be submitted at work completion.

1.5 FORMAT

- .1 Organize data as instructional manual.
- .2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.
- .3 When multiple binders are used correlate data into related consistent groupings.
 - .1 Identify contents of each binder on spine.
- .4 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.
- .5 Arrange content by logical order of activities, under Section numbers and sequence of Table of Contents.
- .6 Provide tabbed fly leaf for each separate product, with typed description of product.
- .7 Text: manufacturer's printed data, or typewritten data.
- .8 Drawings: provide with reinforced punched binder tab.
 - .1 Bind in with text; fold larger drawings to size of text pages.
- .9 Provide 1:1 scaled CAD files in .dwg format on CD.

1.6 CONTENTS - PROJECT RECORD DOCUMENTS

- .1 Table of contents for each volume: provide title of project:
 - .1 Date of submission, names;
 - .2 Address, name and telephone number of Departmental Representative;
 - .3 Schedule of products and systems, indexed to content of volume.
- .2 For each product or system:
 - .1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- .3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- .4 Drawings: supplement product data to illustrate relations of component parts.

1.7 AS-BUILT DOCUMENTS AND SAMPLES

- .1 Maintain, in addition to requirements in General Conditions, at site for Departmental Representative one record copy of:
 - .1 Contract Drawings;
 - .2 Specifications;
 - .3 Addenda;
 - .4 Change Orders and other modifications to Contract;
 - .5 Reviewed shop drawings, product data, and samples;
 - .6 Field test records;

- .7 Inspection certificates;
- .8 Manufacturer's or Supplier's certificates.
- .2 Store record documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage.
- .3 Label record documents and file in accordance with Section number listings in Project Manual of project file. Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for inspection by Departmental Representative.

1.8 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

- .1 Record information on two (2) set opaque drawings, and one (1) copy of project file.
- .2 Use red felt tip marking pens for recording information.
- .3 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
- .4 Contract Drawings and shop drawings: mark each item to record actual construction, including:
 - .1 Field changes of dimension and detail;
 - .2 Changes made after change orders;
 - .3 Details not on original Contract Drawings;
 - .4 References to related shop drawings and modifications.
- .5 Specifications: mark each item to record actual construction, including:
 - .1 Name of supplier of each product actually installed, especially optional items and substitute items;
 - .2 Changes made by Addenda and change orders.
- .6 Other documents: maintain inspection certifications and test records required by individual specifications sections.
- .7 Provide digital photos, if requested, for site records.

1.9 FINAL SURVEY

- .1 Submit final site survey certificate with Section 01 71 00 – Examination and Preparation, certifying that elevations and locations of completed Work are in conformance, or non-conformance with Contract Documents.

1.10 WARRANTIES AND BONDS

- .1 Develop warranty management plan to contain information relevant to Warranties.

- .2 Submit warranty management plan, five (5) days before planned pre-warranty conference, to Departmental Representative approval.
- .3 Warranty management plan to include required actions and documents to assure that Departmental Representative receives warranties to which it is entitled.
- .4 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:
 - .1 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal;
 - .2 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten (10) days after completion of applicable item of work;
 - .3 Verify that documents are in proper form, contain full information, and are notarized;
 - .4 Co-execute submittals when required;
 - .5 Retain warranties and bonds until time specified for submittal.
- .5 Conduct joint 4 month and 9 month warranty inspection, measured from time of acceptance, by Departmental Representative.
- .6 Include information contained in warranty management plan as follows:
 - .1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, subcontractors, manufacturers or suppliers involved;
 - .2 Listing and status of delivery of Certificates of Warranty for extended warranty items;
 - .3 Provide list of all warranted equipment, item, and feature;
 - .4 Contractor's plans for attendance at 4 and 9 month post-construction warranty inspections.
- .7 Respond in timely manner to oral or written notification of required construction warranty repair work.
- .8 Written verification to follow oral instructions.
 - .1 Failure to respond will be cause for PWGSC to proceed with action against Contractor.

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 01 35 43 – Environmental Procedures.
- .2 01 45 00 – Quality Control.
- .3 01 56 00 – Temporary Barriers and Enclosures.
- .4 35 31 19 – Revetments.

1.2 SCOPE OF WORK

- .1 Ensure the supervision of Work and supply all manpower, equipment, tools, materials, transportation and other services needed to carry out and complete all Work described and specified in this Section and in the Contract Documents including, but not limited to: excavation, stabilization, backfilling using approved granular material and the compaction of excavations (when required), and as indicated on plans and specifications.
- .2 The excavation and backfilling work described in this Section refers to the backfilling for the construction of temporary structures as well as the excavation for their dismantlement.
- .3 Excavation and backfilling include all necessary work to bring the projected infrastructure to the longitudinal and transverse profiles indicated on drawings or required by the Departmental Representative.
- .4 According to the nature of Work, no 1st class excavation is projected.

1.3 EARTHWORKS GUIDE

- .1 For information purposes, volumes of excavation and backfilling are specified on bid form for temporary and permanent works. These volumes are raw and do not include factors of use (FU) and implementation factor (FM) of materials. The Contractor has to estimate his own quantities of backfilling, excavation, as well as the factors of use (FU) and implementation factor (FM) to reach limits shown on drawings.
- .2 No compensation will be paid to the Contractor if the actual executed quantities differ (and even if they differ from more than 15%) in more or less of those specified on slip.
- .3 Variation in excavated or backfilled material quantities for the construction of temporary works may not, under any circumstances, justify claim by Contractor. The only exception is the provisional quantities for jetties (Item 2.5 of the bid form) to be placed outside the limits in Item 2.4 of the bid form.

1.4 REFERENCES

- .1 Bureau de normalisation du Québec (BNQ) (latest edition)
 - .1 NQ 2501-255: Soils - Determination of the Water-Density Relation - Modified Effort Compaction Test (2700 kN.m/m³).
- .2 Ministère des Transports du Québec (MTQ)

- .1 Statement of Work and General Specifications – Road infrastructures, Construction and Repairs (latest edition).
- .2 Standards, Roadwork, Vol. VII “Materials” (latest edition).
 - .1 2101 Standard – Aggregates;
 - .2 2103 Standard - Granular materials for the cushion, surround, anti-contamination layer and filter layer.
- .3 Standards Roadwork, Volume II (latest edition).
- .3 American Society for Testing and Materials International (ASTM)
 - .1 ASTM C117 – 13, Standard Test Method for Materials Finer than 75- μ m (No. 200) Sieve in Mineral Aggregates by Washing;
 - .2 ASTM C 136-05, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates;
 - .3 ASTM D422-63(2007)e2, Standard Test Method for Particle-Size Analysis;
 - .4 ASTM D698-12e2, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³));
 - .5 ASTM D1557-12e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³));
 - .6 ASTM D4318-10e1, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- .4 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-8.2-88, Sieves, Testing, Woven Wire, Metric.

1.5 DEFINITIONS

- .1 Additional excavation: any excavation work requested in writing by the Departmental Representative in addition to that anticipated or called for in the drawings and specifications.
- .2 Backfill materials: material placed over the surround or protective layer up to the level of the infrastructure, the definitive ground level or the natural soil.
- .3 Backfilling: operation, which consists in filling natural soil and/or excavation of trench using bedding, surround, fill material or borrow material.
- .4 Off-site borrow material: material from a source outside the worksite, which is required to fill excavations, build embankments, or other Work when the excavated material is not reusable according to geotechnical specifications or are in short supply.
- .5 Classes of excavated material: two classes of excavated material are recognized, i.e., rock excavation (1st class excavation) and common excavation (2nd class excavation).
 - .1 1st class excavation: no 1st class excavation is projected for this Work;
 - .2 2nd class excavation: excavation of material of whatever nature other than that covered by the definition of 1st class excavation, including dense till, compact clay, frozen materials and partly cemented materials, which can be ripped and excavated using heavy equipment. Stripping, trench cleaning and reshaping are considered.

- .6 Topsoil: any material likely to favour the growth of vegetation and capable of being used as complementary soil for landscaping or seeding. Furthermore, if it is present on the site, this material must be excavated where specified on the worksite. This material is unsuitable for use as fill. For planting, refer to 32 01 90.13, and following sections, for requirements specific to this work.

1.6 ELEMENTS TO BE SUBMITTED

- .1 Contractor shall refer to Sections 01 33 00 – Submittal Procedures and Documents and 01 45 00 – Quality Control, which regulate procedures to follow for acceptance of backfilled material to be used.
- .2 Prior to the start of backfilling work, Contractor shall submit to Departmental Representative, for verification and approval, details of projected work for execution of both temporary and permanent work, in accordance with the specifications sections.

1.7 PROTECTION OF EXISTING UTILITIES

- .1 Existing utilities and structures:
 - .1 Before undertaking any excavation work, the Contractor has both the responsibility and the obligation to contact Info-Excavation (+1 800-663-9228), or any other organization not serviced by Info-Excavation, in order for the companies concerned to identify the location of underground utilities and services present on the worksite;
 - .2 Information relating to public utilities is based on available documents. It is provided to the Contractor for guidance purposes only and should not be considered as complete or accurate;
 - .3 Should private or public structures or utilities be found, whether or not they appear on the plans or are indicated on the Contract sites, crossing or close to projected excavation work, above or below ground, it is the Contractor's responsibility to obtain from the owners of these services and/or public utility organizations and companies all required information on the existence, nature, location, size, depth, etc. of these utilities or services;
 - .4 The Contractor must, himself, and at his expense, conclude agreements with the companies concerned with regards to the procedure and program of the Work to be carried out. He must transmit this program to the Departmental Representative at least forty-eight (48) hours before Work is to start near the structures that must be protected;
 - .5 The Contractor must take all measures required to protect these structures against breakage and frost and/or provide the support needed to prevent collapse throughout the execution of the Work which, even once it has been completed, must in no way affect the stability, quality and safety of existing structures. The Contractor alone is responsible for any and all damages incurred as a result of his/her work. All Work to protect and support existing utilities or structures, including digging, is at the Contractor's expense;
 - .6 Digging must be carried out to determine the exact location, depth, and dimensions of the underground services encountered, whether or not they appear on the plans. Excavation in the ground, either frozen or not, is done by hand on each side of the existing underground services, over a distance of 1.5 m (5.0 ft.)

and below, to the underside of the services involved. No additional remuneration will be granted for this Work. The use of explosives is prohibited in this instance;

- .7 Obtain appropriate directives from the Departmental Representative before moving or removing the utilities or structures identified in the excavation zone;
- .8 Note and survey the location of the underground utilities retained, moved or abandoned;
- .9 In addition, unless otherwise specified in drawings and specifications, the Contractor shall put back into its original state, the land on which he performed the Work, and on the total width of the right of way or easement owned by the company concerned.

1.8 CONDITION OF THE WORKSITE

- .1 Take into account the location and special conditions of worksite.
- .2 Take into account the level of the water and groundwater table, weather conditions, and their impacts on the excavation conditions.
- .3 In the event that contaminated materials are detected during construction, these materials must be excavated and managed in compliance with prevailing environmental (Provincial [Quebec] and Federal) and municipal regulations and guidelines or guides. Moreover, excavated materials containing demolition debris must be managed as “potentially recoverable waste”.
 - .1 Materials to be subjected to environmental characterization if no recent or satisfying characterization is available;
 - .2 Excavated material containing demolition debris to be managed as “potentially recoverable waste”.

1.9 PROTECTIVE MEASURES

- .1 Excavation and backfilling work to be carried out according to the Safety Code for the construction industry.
 - .1 Contractor is solely responsible for the choice of excavation and backfilling methods, as long as they meet requirements specified in Section 01 35 43 – Environmental Procedures.
 - .1 Contractor to take all required measures to control introduction of sediments in watercourses as defined in Section 01 35 43 – Environmental Procedures;
 - .2 Contractor to take necessary measures to minimize or even eliminate dust produced by Work.
 - .2 Contractor is fully responsible for any damage to existing installations and services or any bodily injury resulting from the absence or precariousness of the temporary structures and/or improper levelling.
- .2 Ensure the protection of vertical benchmarks, layout benchmarks, survey markers and geodesic monuments.

- .3 Temporary stockpiling of materials:
 - .1 Never stockpile materials where it could interfere with the Work, drainage or the stability of excavation slopes or be vulnerable to wave action;
 - .2 At all times, protect stockpiled materials stored on the site or other location reserved for this purpose from exposure to harmful weather conditions. In the event of inadequate protection, the loading, transportation and disposal of this material in a site authorized by the Municipality and in accordance with the provincial and federal regulations are at the expense of the Contractor's expenses;
 - .3 At the end of each work day, all piles of material must be secured to the satisfaction of the Departmental Representative.
 - .4 A geotextile cloth is required underneath each stockpile.

1.10 SUB-STANDARD MATERIAL

- .1 Sub-standard material must be replaced with standard material approved by the Departmental Representative. Work shall be done again at the Contractor's expense.

Part 2 Products

2.1 GRANULAR MATERIALS

- .1 Granular materials must comply with the requirements of following Sections:
 - .1 01 45 00 – Quality Control;
 - .2 01 56 00 – Temporary Barriers and Enclosures;
 - .3 32 93 10 – Trees, Shrubs and Ground Cover Planting;
 - .4 35 31 19 – Revetments.
- .2 Borrow granular materials must be accepted by Laboratory and Departmental Representative prior to shipment.

Part 3 Execution

3.1 SITE PREPARATION

- .1 Within set limits approved by Departmental Representative, build and maintain roads and accesses to worksite for duration of Work in accordance with Section 01 56 00 – Temporary Barriers and Enclosures.

3.2 STOCKPILING

- .1 Area provided to Contractor (transshipment site) allows for stockpiling of various materials within boundaries shown on drawings for transshipment to Île aux Plaines.

3.3 EXCAVATION EQUIPMENT

- .1 Excavation equipment must be suited to the projected Work requirements and sized to carry it out effectively.

3.4 EXCAVATION AND BACKFILL

- .1 2nd class excavation includes all excavations not identified as 1st class excavation. Excavation materials from dismantling of temporary works is considered as 2nd class excavation.
- .2 Excavations and backfilling required must be done in accordance with specified theoretical lines, sections, layout, levels, and dimensions. Equipment with Real-Time Kinematic and Differential GPS (RTK-DGPS) is required to carry out work.
- .3 Construction material debris, such as bricks, concrete, wood, old paving, sidewalk, cemented stones, and other debris may be found during excavation. Materials shall be recovered and disposed of off site in accordance with article “Disposal of Materials” in this section.
- .4 Take all precautions needed to prevent damage to existing services.

3.5 DISPOSAL OF MATERIALS

- .1 Excess materials associated with the dismantlement of temporary works and with surplus.
 - .1 Materials imported into Île aux Plaines for construction of temporary works must be removed from site after dismantlement.
 - .1 Materials used for construction of access jetties must be entirely removed from site;
 - .2 Method used by Contractor to limit impact to existing soil and release of fine particles while allowing maximum recovery of materials.
 - .2 Waste materials
 - .1 Contractor to load, transport and dispose of all waste materials outside work boundaries at appropriate disposal site which complies with guidelines of MELCC’s *Guide d’intervention – Protection des sols de rehabilitation des terrains contaminés*;
 - .2 Contractor to pay for loading, transshipment, transport and disposal of waste materials.
 - .3 Ligneous materials
 - .1 Materials (such as trees, shrubs, scrubs, branches, stumps, dead wood, and other debris) resulting from cleaning of the area affected by Work must be managed according to Section 01 35 43 – Environmental Procedures;
 - .2 Contractor to pay for management of wood residues (handling, sorting, spreading).

3.6 ACCESS ROADS

- .1 Put in and maintain suitable roads providing access to the worksite.
- .2 Contractor to restore land used as an access road to its original condition when such land is not within right-of-way of projected structure.

3.7 RESTORATION WORK

- .1 Once Work on the project has been completed, remove surplus materials and debris, trim slopes and correct defects identified by the Departmental Representative.
- .2 Contractor to clean and restore, at his own expense, areas damaged by the Work, as directed by the Departmental Representative.
- .3 Unless otherwise indicated, the ratio of embankment slopes will not be less than 1 V: 1.5 H.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 35 31 19 – Revetments.
- .2 Any other relevant section.

1.2 REFERENCES

- .1 ASTM International
 - .1 ASTM A123/A123M-15, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products;
 - .2 ASTM D4491-99a (2014)e1, Standard Test Methods for Water Permeability of Geotextiles by Permittivity;
 - .3 ASTM D4595-11, Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method;
 - .4 ASTM D4716/D4716M-14 Standard Test Method for Determining the (In-Plane) Flow Rate Per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head;
 - .5 ASTM D4751-16, Standard Test Method for Determining Apparent Opening Size of a Geotextile.
- .2 CSA International
 - .1 G40.20-13/G40.21-13 – General Requirements for Rolled or Welded Structural Quality Steel.
- .3 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-4.2 number 11.2-M89 (R2013), Textile Test Methods Bursting Strength – Ball Burst Test (Reaffirmation of September 1989);
 - .2 CAN/CGSB-148.1, Methods of Testing Geosynthetics (complete set).
 - .1 No. 2-M85, Methods of Testing Geosynthetics – Mass per Unit Area;
 - .2 No. 3-M85, Methods of Testing Geosynthetics – Thickness of Geotextiles;
 - .3 No. 4-94, Geotextiles – Normal Water Permeability Under No Compressive Load;
 - .4 No. 6.1-93, Methods of Testing Geosynthetics – Bursting Strength of Geotextiles under no Compressive Load;
 - .5 No. 7.3-92, Methods of Testing Geosynthetics – Grab Tensile Test for Geotextiles;
 - .6 No. 10-94, Methods of Testing Geosynthetics – Geotextiles – Filtration Opening.
- .4 Ministère des Transports du Québec (MTQ)

- .1 *Cahier des charges et devis généraux du ministère des Transports du Québec, dernière édition.*

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Product data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for geotextile and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Samples
 - .1 Submit the following samples two (2) weeks before start of work.
 - .1 Length of at least 2 m of geotextile, full width of roll;
 - .2 Assembly and installation methods considered.
- .4 Testing and Assessment Reports
 - .1 Submit the required number of copies of results and factory test certificates at least two (2) weeks before the start of work.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 – Common Product Requirements, and with Manufacturer's written directives.
- .2 Storage and Handling Requirements:
 - .1 Store material and equipment in a clean location and so that they are not on the ground, in accordance with the Manufacturer's recommendations;
 - .2 Store geotextiles as to protect them from direct sunlight and UV rays;
 - .3 Replace faulty or damaged material or equipment with new.
- .3 Packaging Waste Management: remove for reuse as specified in Construction Waste Management Plan in accordance with Section 01 74 21 – Waste Management and Disposal.

Part 2 Products

2.1 MATERIAL

- .1 Geotextile: under the filter layer of breakwaters, as shown on drawings.
 - .1 Nonwoven reinforcement geocomposite joined by needling, provided in rolls.
 - .2 Physical Properties:
 - .1 100% polyester mass;
 - .2 Thickness: min. 2.9 mm, to ASTM D5199;
 - .3 Tensile strength and elongation in main axes: min. 1,100 N to CAN/148.1, #7.3;
 - .4 Bursting strength: min. 3,500 kPa (wet), to CAN-4.2, #11.1.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrate previously installed under other Sections or Contracts are acceptable for planting installation in accordance with drawings and specifications requirements.
 - .1 Visually inspect substrate in presence of Departmental Representative;
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery;
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of approval to proceed from Departmental Representative.

3.2 INSTALLATION

- .1 Revetments
 - .1 Install geotextile on graded surfaces in specified location, and fixing it using bricks to prevent uplift or movement;
 - .2 Install geotextile as to obtain an even surface free of wrinkles, buckles and areas under stress;
 - .3 Have each geotextile strip overlap entirely and uniformly the previous one by 900 mm;
 - .4 The geotextile strips must cover the entire width of the projected bedding of the filter stone sub base;
 - .5 Prevent shift of geotextiles and protect them against damage and degradation before, during, and after covering of the filter stone sub base;
 - .6 Replace damaged or deteriorated sections of geotextiles at the satisfaction of the Departmental Representative;
 - .7 In no way can the Contractor directly manoeuvre machinery on the geotextiles. He must place the first layer of stones by putting them down on the membrane, not by directly dumping stones from the trucks. Maximum permissible distance for dumping stones is 1.0 m, calculated from the geotextile and not the water level.

3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 – Cleaning.
- .2 Leave premises clean and tidy after every work day.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 01 32 16.07 – Construction Progress Schedule – Bar (GANTT) Chart.
- .2 01 33 00 – Submittal Procedures.
- .3 01 35 43 – Environmental Procedures.
- .4 01 45 00 – Quality Control.
- .5 32 93 10 – Trees, Shrubs and Ground Cover Planting.

1.2 REFERENCE STANDARDS

- .1 Health Canada - Pest Management Regulatory Agency (PMRA)
 - .1 National Standard for Pesticide Education, Training and Certification in Canada (1995).
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .3 Department of Justice Canada (Jus)
 - .1 Canadian Environmental Protection Act (CEPA), 1999, c. 33;
 - .2 Fertilizers Act (R.S. 1985, c. F-10);
 - .3 Fertilizers Regulations (C.R.C., c. 666);
 - .4 Transportation of Dangerous Goods Act (TDGA), 1992, c. 34.
- .4 Canadian Standards Association (CSA).

1.3 DEFINITIONS

- .1 Mycorrhiza: association between fungus and roots of plants. This symbiosis enhances plant establishment in newly landscaped and imported soils.

1.4 ADMINISTRATIVE REQUIREMENTS

- .1 Scheduling:
 - .1 Obtain approval from Departmental Representative of schedule indicating beginning of Work; schedule to comply with requirements of Section 01 32 16.07 – Construction Progress Schedule – Bar (GANTT) Chart.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

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

- .2 Provide written reports on maintenance during warranty period, to Departmental Representative identifying:
 - .1 Maintenance work carried out;
 - .2 Development and condition of plant material;
 - .3 Preventative or corrective measures required which are outside Contractor's responsibility.

1.6 DELIVERY, STORAGE AND HANDLING

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

1.7 MAINTENANCE DURING WARRANTY PERIOD

- .1 From time of acceptance by Departmental Representative to end of warranty period, perform following maintenance operations.
 - .1 Water to maintain roots moisture conditions for optimum growth and health of plant material without causing erosion;
 - .2 If required, apply pesticides in accordance with National Standard for Pesticide Education, Training and Certification in Canada, Federal, Provincial and Municipal regulations as and when required to control insects, fungus and disease. Obtain product approval from Departmental Representative prior to application;
 - .3 If required, apply fertilizer in early spring at manufacturer's suggested rate. Submit products to Departmental Representative for approval prior to application.

Part 2 Products

2.1 MATERIALS

- .1 Fertilizer:
 - .1 To Canada Fertilizer Act and Fertilizers Regulations;
 - .2 Complete, commercial, slow release with 35% of nitrogen content in water-insoluble form.
- .2 Mycorrhiza.
- .3 Anti-desiccant: commercial, wax-like emulsion.
- .4 Filter Cloth:

- .1 Type 1: 100 % non-woven needle punched polyester, 2.75 mm thick, 240 g/m² mass;
- .2 Type 2: biodegradable burlap.
- .5 Wood posts: 38 x 89 x 2,400 mm length.
- .6 High-density polyethylene fence, height: 1,200 mm.

Part 3 Execution

3.1 EXAMINATION

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

3.2 IDENTIFICATION AND PROTECTION

- .1 Tree protection to be installed prior to the start of any on-site work.
- .2 Identify plants and limits of root systems to be preserved as approved by Departmental Representative.
- .3 Protect plant and root systems from damage, compaction and contamination resulting from construction as approved by Departmental Representative.
- .4 Ensure no root pruning is done inside drip line. If pruning inside drip line is required consult an arborist or Canadian Certified Horticultural Technician (CCHT) as approved by Departmental Representative.

3.3 TRUNK PROTECTION

- .1 Install polyethylene fence around the perimeter of vegetation to be protected.

3.4 ROOT CURTAIN SYSTEM

- .1 Identify limits for required construction excavation as approved by Departmental Representative.
- .2 Prune exposed roots cleanly at side of trench nearest plants to be preserved. Pruned ends to point obliquely downwards.
- .3 Water plants sufficiently during construction to maintain optimum soil moisture condition until backfill operations are complete.

3.5 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 in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 01 33 00 – Submittal Procedures.
- .2 01 35 43 – Environmental Procedures.
- .3 01 45 00 – Quality Control.
- .4 32 93 10 – Trees, Shrubs and Ground Cover Planting.

1.2 MEASUREMENT AND PAYMENT

- .1 Payment for seeding will be made at unit price bid per square metre of actual surface measurements, in accordance with Section 01 29 00 – Payment Procedures, taken and computed by Departmental Representative.

1.3 REFERENCE STANDARDS

- .1 Agriculture and Agri-Food Canada (AAC)
 - .1 Plant Hardiness Zones in Canada (latest version).
- .2 Canadian Nursery Landscape Association (CNLA)
 - .1 Canadian Standards for Nursery Stock (latest version).
- .3 Bureau de normalisation du Québec
 - .1 NQ 0605-100/2001 Aménagement paysager à l'aide de végétaux;
 - .2 NQ 0605-300/2001 Produits de pépinières et de gazon.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for seed, and fertilizer;
 - .2 Submit one (1) copy of WHMIS MSDS in accordance with Sections 01 35 43- Environmental Procedures, and 01 35 29.06 – Health and Safety Requirements.
- .3 Samples:
 - .1 Submit 0.5 kg container of each type of seed mix used.
- .4 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.5 QUALITY ASSURANCE

- .1 Qualifications:

- .1 Landscape Contractor: to be a Member in Good Standing of Association des métiers horticoles;
- .2 Landscape Planting Supervisor: Landscape Industry Certified Technician with Softscape Installation designation;
- .3 Landscape Maintenance Supervisor: Landscape Industry Certified Technician with Turf Maintenance designation.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements:
 - .1 Labelled bags of seed mix identifying mass in kg, mix components and percentages, date of bagging, supplier's name and lot number.
- .3 Storage and Handling Requirements:
 - .1 Store materials in accordance with manufacturer's recommendations;
 - .2 Replace defective or damaged materials with new.
- .4 Develop Construction Waste Management Plan and Waste Reduction Workplan related to Work of this Section and in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

1.7 WARRANTY

- .1 For seeding, warranty period is 12 months and must correspond to one (1) full growing season.
- .2 Contractor hereby warrants that seeding will remain free of defects in accordance with General Conditions CCDC GC 12.3, but for one (1) full growing season.
- .3 End-of-warranty inspection of seeding work will be conducted by Departmental Representative.

Part 2 Products

2.1 GRASS SEED

- .1 Canada "Certified" seed, "Canada No. 1 Ground Cover Mixture" in accordance with Government of Canada "Seeds Act" and "Seeds Regulations".
 - .1 Grass seed mixture, MICA 2009-type (modified).
 - .1 Mixture composition:
 - .1 Italian rye grass (*Lolium multiflorum*) reduced to 25%;
 - .2 25.6% Canada wild rye (*Elymus canadensis*);
 - .3 19% red fescue (*Festuca rubra*);
 - .4 17.5% Bid Bluestem (*Andropogon gerardi*);
 - .5 3.1% Switchgrass (*Panicum virgatum*);
 - .6 2.5% Prairie cord grass (*Spartina pectinata*);

- .7 1.6% redtop (*Agrostis gigantea* [alba]);
 - .8 0.7% Bluejoint reedgrass (*Calamagrostis canadensis*);
 - .9 5% Common milkweed (*Asclepias syriaca*) (as replacement for *Lolium multiflorum*).
- .2 In packages individually labelled in accordance with "Seeds Regulations" and indicating name of supplier.

2.2 WATER

- .1 Water for required irrigation can be collected from Lake Saint-Louis.
- .2 Do not collect from stagnant water.

2.3 FERTILIZER

- .1 No fertilizer can be applied given proximity with watercourse.

2.4 PROTECTION NET

- .1 Coco Fiber Mat with double photodegradable polypropylene net of 9 mm x 9 mm mesh fixed with metal stakes.

Part 3 Execution

3.1 EXAMINATION

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

3.2 SEED BED PREPARATION

- .1 Do not perform work under adverse field conditions.
- .2 Remove and dispose of weeds; debris; stones 50 mm in diameter and other deleterious materials; in location as directed by Departmental Representative in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.
- .3 Verify that grades are correct. If discrepancies occur, notify Departmental Representative and commence work when instructed by Departmental Representative.
- .4 Fine grade surface free of humps and hollows to smooth, even grade to favour surface draining naturally.

- .5 Cultivate fine graded surface approved by Departmental Representative to 25 mm depth immediately prior to seeding.

3.3 SEED PLACEMENT

- .1 Ensure seed is placed under supervision of Supervisor with at least five (5) years' experience in seeding work.
- .2 For manual seeding:
 - .1 Use manually operated and non-motorized seed spreader;
 - .2 Use manually operated, water ballast, landscaping type, smooth steel drum roller. Ballast as directed by Departmental Representative;
 - .3 Use equipment and method acceptable to Departmental Representative.
- .3 On cultivated surfaces, sow seed uniformly at rate of:
 - .1 0.5 kg/100 m².
- .4 Sow half of required amount of seed in one direction and remainder at right angles as applicable.
- .5 Incorporate seed at maximum depth of 5 mm by light raking in cross directions.
- .6 Consolidate mechanically seeded areas with equipment approved by Departmental Representative.

3.4 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 – Cleaning.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 – Cleaning.

3.5 PROTECTION

- .1 Prevent traffic over seeded areas until vegetation is established;
- .2 Install protection net over larger seeded areas (5 m² and more) to prevent grazing by avifauna.
- .3 Remove protection nets when seed are rooted enough to resist grazing by avifauna.

3.6 MAINTENANCE DURING ESTABLISHMENT PERIOD

- .1 Perform following operations from time of seed application until acceptance by Departmental Representative:
 - .1 Water seeded area to maintain optimum soil moisture level for germination and continued growth of grass. Control watering to prevent washouts;
 - .2 Repair and reseed bare spots to allow establishment of seeds prior to acceptance;
 - .3 Remove weeds by mechanical or chemical means utilizing acceptable integrated pest management practices.

3.7 FINAL ACCEPTANCE

- .1 Seeded areas will be accepted by Departmental Representative provided that:
 - .1 Areas are uniformly established free of rutted, eroded, bare or dead spots;
 - .2 Seed regrowth has reached at least 150 mm in height over 75% of each square metre of seeded area.

3.8 MAINTENANCE DURING WARRANTY PERIOD

- .1 Perform following operations from time of acceptance until end of warranty period.
 - .1 Repair and reseed dead or bare spots to satisfaction of Departmental Representative;
 - .2 Remove weeds by mechanical or chemical means utilizing acceptable integrated pest management practices.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 01 33 00 – Submittal Procedure.
- .2 01 35 43 – Environmental Procedures.
- .3 01 45 00 – Quality Control.
- .4 01 61 00 – Common Product Requirements.
- .5 01 78 00 – Closeout Submittals.
- .6 32 01 90.33 – Tree and Shrub Preservation.
- .7 32 92 19.13 – Mechanical Seeding.

1.2 REFERENCES

- .1 Agriculture and Agri-Food Canada (AAFC)
 - .1 Plant Hardiness Zones in Canada, latest edition.
- .2 Canadian Nursery Landscape Association (CNLA)
 - .1 Canadian Standards for Nursery Stock, latest edition.
- .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .4 Bureau de normalisation du Québec
 - .1 NQ 0605-100/2001 Aménagement paysager à l'aide de végétaux;
 - .2 NQ 0605-300/2001 Produits de pépinières et de gazon.

1.3 DEFINITIONS

- .1 Mycorrhiza: association between fungus and roots of plants. This symbiosis, enhances plant establishment in newly landscaped and imported soils.

1.4 ADMINISTRATIVE REQUIREMENTS

- .1 Scheduling: obtain approval from Departmental Representative of schedule and supplier's plant purchase order 15 days in advance of shipment of plant material.
- .2 Schedule to include:
 - .1 Quantity and type of plant material;
 - .2 Shipping dates;
 - .3 Arrival dates on site;
 - .4 Planting Dates.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for trees, shrubs, submerged plants, mycorrhiza, anti-desiccant, geotextile, soil mixture for plants in revetment, anchoring equipment, mulch mat (Bio-Disque) and rodent guards, and include product characteristics, performance criteria, physical size, finish and limitations;
 - .2 Submit 1 copy of WHMIS MSDS in accordance with Section 01 35 29.06 – Health and Safety Requirements and Section 01 35 43 – Environmental Procedures.
- .3 Samples:
 - .1 Submit samples of soil mixture (1 liter) for plants in revetment, mulch mat (Bio-Disque) and anchoring equipment for plants in swamp.

1.6 QUALITY ASSURANCE

- .1 Qualifications:
 - .1 Landscape Contractor: to be a Member in Good Standing of *Association des métiers horticoles*;
 - .2 Landscape Planting Supervisor: Landscape Industry Certified Technician with Softscape Installation designation;
 - .3 Landscape Maintenance Supervisor: Landscape Industry Certified Technician with Ornamental Maintenance designation.

1.7 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 – Common Product Requirements.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
 - .1 Protect plant material from frost, excessive heat, wind and sun during delivery.
 - .2 Protect plant material from damage during transportation:
 - .1 Delivery distance is less than 30 km and vehicle travels at speeds under 80 km/h, tie tarpaulins around plants or over vehicle box;
 - .2 Delivery distance exceeds 30 km or vehicle travels at speeds over 80 km/h, use enclosed vehicle, if possible;
 - .3 Protect foliage and root balls using anti-desiccant and tarpaulins, where use of enclosed vehicle is impractical due to size and weight of plant material.
- .3 Storage and Handling Requirements:

- .1 Immediately store and protect plant material which will not be installed within 1 hour in accordance with supplier's written recommendations and after arrival at site in storage location approved by Departmental Representative.
- .2 Protect stored plant material from frost, wind and sun and as follows:
 - .1 For bare root plant material, preserve moisture around roots by heeling-in or burying roots in sand or topsoil and watering to full depth of root zone;
 - .2 For pots and containers, maintain moisture level in containers. Heel-in fibre pots;
 - .3 For balled and burlapped and wire basket root balls, place to protect branches from damage. Maintain moisture level in root zones.
- .3 Store and manage hazardous materials in accordance with manufacturer's written instructions and laws and regulations in force.
- .4 Packaging Waste Management: remove for reuse by manufacturer of pallets and for return of other packaging materials as specified in Construction Waste Management Plan in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

1.8 WARRANTY

- .1 For plant material as itemized on plant list, the warranty period is 12 months.
- .2 Contractor hereby warrants that plant material as itemized on plant list will remain free of defects in accordance with General Conditions CCDC (GC 12.3), but for 1 full growing season, once only providing adequate maintenance has been provided.
- .3 End-of-warranty inspection will be conducted by Departmental Representative.
- .4 Departmental Representative reserves the right to extend Contractor's warranty responsibilities for an additional one year if, at end of initial warranty period, leaf development and growth is not sufficient to ensure future survival.

Part 2 Products

2.1 PLANT MATERIAL

- .1 Type of root preparation, sizing, grading and quality: comply to Canadian Standards for Nursery Stock.
 - .1 Source of plant material: grown in Zone 3 in accordance with Plant Hardiness Zones in Canada;
 - .2 Plant material must be planted in zone specified as appropriate for its species;
 - .3 Plant material in location appropriate for its species.
- .2 Plant material: free of disease, insects, defects or injuries and structurally sound with strong fibrous root system.
- .3 Trees: with straight trunks, well and characteristically branched for species.

- .4 Trees larger than 200 mm in caliper: half root pruned during each of two successive growing seasons, the latter at least one growing season before arrival on site.
- .5 Bare root stock: nursery grown, in dormant stage, not balled and burlapped or container grown.
- .6 Collected stock: maximum 40 mm in caliper, with well-developed crowns and characteristically branched; no more than 40% of overall height may be free of branches.

2.2 WATER

- .1 Water necessary for watering of plants can be directly collected from Saint-Louis Lake.

2.3 TRUNK PROTECTION

- .1 Wire mesh: galvanized, electrically welded 1.4 mm wire with 25 x 25 mm mesh and fastener.

2.4 MYCORRHIZA

- .1 Fertilizer: fertilizer cannot be applied given proximity with watercourse.
- .2 Mycorrhiza
 - .1 Ensure new root growth is in contact with mycorrhiza;
 - .2 Use mycorrhiza as recommended by manufacturer's written recommendations.

2.5 ANTI-DESICCANT

- .1 Wax-like emulsion.

2.6 MULCH MAT (Bio-Disque)

- .1 Coir mulch mat (dia: 600 mm) and 200 mm metallic staples.

2.7 BIODEGRADABLE MEMBRANE FOR PLANTS IN REVETMENT

- .1 Coir biodegradable geotextile; thickness: between 8 and 100 mm.

2.8 SOIL MIXTURE FOR PLANTS IN REVETMENT

- .1 Contractor to provide a Certificate of Agronomic Analysis signed by a chemist or agronomist at least fifteen (15) days before start of Work.
- .2 Soil mixture presents the following properties:
 - .1 Organic Material > 6%;
 - .2 pH level between 6 and 7;
 - .3 Phosphorus > 100 kg/ha;
 - .4 Potassium > 225 kg/ha;
 - .5 Calcium < 6,000 kg/ha.

2.9 ANCHORING FOR PLANTS IN GRASS BEDS

- .1 Staples: U-shape, length: 200 mm.

2.10 SOURCE QUALITY CONTROL

- .1 Obtain approval from Departmental Representative of plant material prior to planting.
- .2 Imported plant material must be accompanied with necessary permits and import licences. Conform to federal, provincial or territorial regulations.

Part 3 Execution

3.1 EXAMINATION

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

3.2 PRE-PLANTING PREPARATION

- .1 Proceed only after receipt of written acceptability of plant material from Departmental Representative.
- .2 Remove damaged roots and branches from plant material.
- .3 Apply anti-desiccant to deciduous trees and shrubs in leaf in accordance with manufacturer's instructions.

3.3 EXCAVATION AND PREPARATION OF PLANTING BEDS

- .1 For individual planting holes:
 - .1 Stake out location and obtain approval from Departmental Representative prior to excavating;
 - .2 Excavate to depth and width as indicated;
 - .3 Remove subsoil, rocks, roots, debris and toxic material from excavated material that will be used as planting soil for trees and individual shrubs. Dispose of excess material;
 - .4 Scarify sides of planting holes;
 - .5 Remove water which enters excavations prior to planting.

3.4 PLANTING

- .1 For jute burlapped root balls, cut away top one third of wrapping and wire basket without damaging root ball.
 - .1 Do not pull burlap or rope from under root ball.
- .2 For container stock or root balls in non-degradable wrapping, remove entire container or wrapping without damaging root ball.
- .3 For trees and shrubs in containers within the shrub and tree swamps:
 - .1 Planting of trees and shrubs in containers: with topsoil from excavation of planting hole and without adding topsoil and soil mixture from outside the island;
 - .2 Planting of trees and shrubs in containers: complies with specifications indicated on drawings;
 - .3 Planting of trees and shrubs in containers – treed swamp: undertaken between the end of the spring flood and August 16th;
 - .4 Backfill with topsoil from excavation.
 - .1 Tamp each lift to eliminate air pockets;
 - .2 Water once two thirds of depth of planting pit has been backfilled;
 - .3 After water has penetrated into soil, backfill to finish grade;
 - .4 After soil settlement has occurred, fill with soil to finish grade;
 - .5 Plants to be thoroughly watered immediately after planting.
- .4 Multicell shrubs to be placed in shrub swamp and along shore.
 - .1 Planting of shrubs in multicells: directly in in-situ soil and in accordance with specifications shown on drawings;
 - .2 Planting of shrubs in multicells: between the end of spring and August 16th;
 - .3 Plants to be thoroughly watered immediately after planting.
- .5 Multicell shrubs to be placed in shore nourishment.
 - .1 Planting of shrubs in multicells throughout the revetment: in accordance with specifications indicated on drawings;
 - .2 Planting in shore nourishment: between the end of the spring flood and ideally before the beginning of September;
 - .3 Contractor to determine location of projected individual holes in revetment gaps. Minimal distance between holes must be 1 m;
 - .4 Contractor to place biodegradable geotextile (thickness: 8 to 10 mm) in the gap as to form a pocket. Pocket to be then filled with soil mixture;
 - .5 Young plants in multicells: to be placed in pockets so that collar crown elevation matches final ground elevation. Geotextile must be folded around the plant base to avoid leaching of soil mixture. Contractor to make sure plant is properly trapped between rocks while making sure its good development is not hindered;
 - .6 Plants to be thoroughly watered immediately after planting.

- .6 Multicell herbaceous plants in grass beds.
 - .1 Planting of grass beds: between the end of the spring flood and August 16th;
 - .2 Planting of herbaceous plants in multicells: in compliance with specifications shown on drawings;
 - .3 Planting of herbaceous plants in multicells: directly in in-situ soil;
 - .4 Keep young plants in place using anchoring.

3.5 TRUNK PROTECTION

- .1 Install trunk protection on deciduous trees as indicated.
- .2 Install trunk protection before installation of tree supports.

3.6 MULCHING

- .1 Coir mulch mat (Bio-Disque) (dia: 600 mm) to be placed around each plant, except plants in revetment.

3.7 MAINTENANCE DURING ESTABLISHMENT PERIOD

- .1 Perform following maintenance operations from time of planting to acceptance by Departmental Representative.
 - .1 Make sure to maintain soil moisture conditions for optimum establishment, growth and health of plant material without causing erosion;
 - .2 Remove undesirable plants harmful to plant growth;
 - .3 If required to control insects, fungus and disease, use appropriate control methods in accordance with Federal, Provincial and Municipal regulations. Obtain product approval from Departmental Representative prior to application;
 - .4 Remove dead or broken branches from plant material;
 - .5 Keep trunk protection in proper repair and adjustment;
 - .6 Remove and replace dead plants and plants not in healthy growing condition. Make replacements in same manner as specified for original plantings.

3.8 MAINTENANCE DURING WARRANTY PERIOD

- .1 From time of acceptance by Departmental Representative to end of warranty period, perform following maintenance operations:
 - .1 Water to maintain soil moisture conditions for optimum growth and health of plant material without causing erosion;
 - .2 Remove undesirable plants harmful to plant growth;
 - .3 If required to control insects, fungus and disease, use appropriate control methods in accordance with Federal, Provincial and Municipal regulations. Obtain product approval from Departmental Representative prior to application;
 - .4 Verify if soil amendment is required to ensure viability of plants;
 - .5 Remove dead, broken or hazardous branches from plant material;
 - .6 Keep trunk protection and tree supports in proper repair and adjustment;

- .7 Remove trunk protection, tree supports and level watering saucers at end of warranty period and transport outside of island;
- .8 Plants in containers: Contractor to pay for replacement, until Acceptance of Work, of all dead plants and plants with more than 33% of stems or peaks dead or non-healthy. Replacement plants to be of same species, size and quality as original plants;
- .9 Young plants in multicells: a loss of 15% of plants, per species, is tolerated during the maintenance period. Replacement plants to be of same species, size and quality as original plants;
- .10 Submit after each maintenance visit written reports to Departmental Representative identifying:
 - .1 Maintenance work carried out;
 - .2 Development and condition of plant material;
 - .3 Plant mortality count;
 - .4 Preventative or corrective measures required which are outside Contractor's responsibility.

3.9 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 – Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 – Cleaning.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.
 - .1 Divert discarded burlap, wire, plastic containers materials and labels to recycling facility approved by Departmental Representative;
 - .2 Dispose of unused anti-desiccant at official hazardous material collections site approved by Departmental Representative.

3.10 CLOSEOUT ACTIVITIES

- .1 Submit maintenance reports for trees, shrubs, and other plantings.
- .2 Submit documents required in Section 01 78 00 – Closeout Submittals.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 01 29 83 – Payment Procedures for Testing Laboratory Services.
- .2 01 32 16.07 – Construction Progress Schedule – Bar (Gantt) Chart.
- .3 01 33 00 – Submittal Procedures.
- .4 01 45 00 – Quality Control.
- .5 01 61 00 – Common Product Requirements.
- .6 01 71 00 – Examination and Preparation.
- .7 01 74 11 – Cleaning.
- .8 31 32 19.16 – Geotextile Soil Stabilization.

1.2 REFERENCES

- .1 Definition:
 - .1 Rock: Any solid material, except frozen material, whose volume is greater than 1.0 m³ and that cannot be removed nor handled with an excavator for rigorous work equipped with a bucket of a capacity of 1.8 to 2.1 m³.
- .2 American Society for Testing and Materials International (ASTM):
 - .1 ASTM C127-12, Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate;
 - .2 ASTM D6928-10, Standard Test Method for Resistance Coarse Aggregate to Degradation in the Micro-Deval apparatus.
- .3 Canadian General Standards Board (CGSB):
 - .1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series;
 - .2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.
- .4 Ministère des Transports du Québec (MTQ)
 - .1 Cahier des charges et devis généraux du Ministère des Transports du Québec (CCDG), latest edition.

1.3 SCOPE OF WORK

- .1 Supervise work and provide the workforce, equipment, tools, material, transport, transshipment and other services necessary for the realization and completion of Work described and specified in the present Section and in the contract documents, including:
 - .1 Profiling and backfilling work for the construction of the infrastructure to the longitudinal and cross profiles of the protection embankments specified on plans or required by Departmental Representative;
 - .2 Placement of geotextile, filter and armour stones specified on plans;

- .3 Removal of temporary structures required for implementation of breakwaters.
 - .1 In accordance with Section 01 56 00 – Temporary Barriers and Enclosures.
- .4 Rehabilitation of surfaces and structures damaged by Work.
 - .1 In accordance with Section 01 74 11 – Cleaning.

1.4 SUBMITTALS FOR APPROVAL/INFORMATION

- .1 Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Testing and assessment reports.
 - .1 Submit results of tests performed.
- .3 Supplier or Manufacturer’s certification of compliance:
 - .1 Proposed sources for supply of stones to be part of permanent structures must be submitted to Departmental Representative for approval;
 - .2 As work progresses, the Supplier must provide Departmental Representative with certification of compliance per material storage area. This certification confirms that stored material complies with the present specifications.
 - .1 In addition to elements described in Part 2 “Product”, the certification of compliance must include the location and identification of the inspected storage area and the report of a geologist certifying that the 700-900 mm stones have no weakness or other flaws that could cause their degradation, over the years, under conditions for protection in the marine environment.
 - .3 Certifications of compliance must be accepted by Departmental Representative before materials are delivered to site;
 - .4 Production of material after the issue of the certification of compliance must require storage and additional certification of compliance.

1.5 STONE QUALITY CONTROL

- .1 The stone control plan must describe the measures the Contractor plans on implementing to ensure quality control (QC) of stones in accordance with Section 01 45 00 – Quality Control.

1.6 QUALITY CONTROL PERSONNEL

- .1 General
 - .1 Contractor must make sure of quality control of all stones used in permanent structures so they comply with contract requirements.
- .2 Qualifications and role of geologist
 - .1 The geologist must be a qualified professional and possess at least three (3) years of experience in inspection and assessment of armour stone. He must help the supervisor in the selection of quarry stones;
 - .2 The geologist must help for the sorting and production of quarry stones before delivery to work site;

- .3 In any case, comply with Departmental Representative's guidelines.
- .3 Qualifications and role of inspectors
 - .1 Inspectors must possess sufficient training and have at least one (1) year of experience as to perform the following tasks in a competent and independent manner, under the overall authority of the supervisor:
 - .1 Visually inspect stone to verify its compliance with quality requirements of present Section. The assessment must focus on its quality, geology, cracks and other prejudicial characteristics that could cause degradation and fragmentation of stone after its placement in structure;
 - .2 Identify and mark stones that do not comply with the criteria for acceptability (be it size, quality and/or shape). Unsuitable stones must be marked by a red "X" on three (3) sides perpendicular to one another;
 - .3 Measure each stone on three (3) sides perpendicular to one another and reject all stones that do not comply with prescribed dimensional ratio;
 - .4 Make and maintain piles of stones divided depending on grade of stone;
 - .5 Make sure rejected stones are piled in a clearly identified "reject" pile or are removed from site at once after they are marked. Rejected stones must be separated from approved stones at all times.

1.7 APPROVAL OF THE CONTROL PLAN AND SOURCE OF SUPPLY

- .1 Departmental Representative may perform independent investigations and assessments when necessary, including stone quality testing or other than prescribed tests, in order to validate if material sorted or produced in quarry comply with requirements. Additional testing will be carried out at the expense of Departmental Representative on stone samples he selected.
- .2 Departmental Representative will approve or reject stone borrow sources proposed by Contractor, the stone control plan and decide on Contractor's staffing on the basis of the following information:
 - .1 Review information and data on stone borrow sources and stone control plan provided by Contractor;
 - .2 Review of information and data on identified quality requirements for stones;
 - .3 If needed, assess additional test results conducted by laboratory.
- .3 Departmental Representative shall decide whether to accept or reject the above-mentioned elements within ten (10) working days following the receipt of these documents.
 - .1 Upon approval of the control plan and staffing, Contractor can start sorting, stockpiling, accepting material stored by the geologist, and placing materials;
 - .2 Should the stone control plan be rejected, Contractor shall develop a new plan (which can include new personnel) and submit this new plan to Departmental Representative before continuing work of present Project.
 - .1 No payment shall be made until suitable control plan is submitted to Departmental Representative;

- .2 Contractor shall assume expense related to the development of a new control plan;
- .3 No time extension shall be given because of changes to the stone control plan.
- .4 No contract milestones extension nor postponement of specified delivery deadlines shall be granted to compensate time taken by Departmental Representative to approve or reject the proposed sources of supply.

1.8 QUALITY ASSURANCE

- .1 General
 - .1 The Quality Assurance (QA) is managed by Departmental Representative; it is meant to produce independent observations on stones compliance with respect to requirements of the present Section before their storage. QA does not relieve Contractor of his responsibilities regarding quality control;
 - .2 Contractor must provide all equipment and workforce for QA;
 - .3 Should QA bring to light noncompliance with respect to requirements of the present Section, Departmental Representative shall reject these stones. Rejected materials must be marked at once with an "X" on three (3) sides perpendicular to one another, set aside and removed from the storage area;
 - .4 Materials that were rejected on the project site must be swiftly removed and excluded from the measurement for payment process. Removal of rejected stones must be paid by Contractor. Their recovery and transformation into materials which may be reused on site is feasible (e.g. non-compliant 700-900 mm stones fragmented into 50-200 mm stones) to satisfaction of Departmental Representative;
 - .5 Other samples and laboratory tests may be required if Departmental Representative notices during his/her quality assurance (QA) activities that stone provided is not up to standards or its quality is questionable. Sampling and recommended testing must comply with guidelines of Departmental Representative. Under the circumstances, Contractor shall bear all costs related to the additional sampling, analysis and testing in laboratory;
 - .6 Persistent non-compliance problems could justify stop of provision and rejection of the stone control plan.
- .2 Particle size analysis
 - .1 Evaluation of mass and distribution of stones;
 - .2 Besides particle size analyses prescribed by Contractor, Departmental Representative can perform additional particle size analyses for QA purposes. These analyses shall be performed at intervals determined by Departmental Representative. He shall select stone samples to be submitted for analysis. Should test results or observation of stones show that stones do not comply with prescribed requirements, process must be modified and additional particle size analysis (QC and QA) must validate corrective measures implemented;
 - .3 Contractor must provide to Departmental Representative all means required for quantification, including loaders, certified scales, equipment operators and

manpower required for collection of samples, measurements (or weighing), individual stones and weighing of the total sample.

1.9 TRANSPORT, STORAGE AND HANDLING

- .1 Transport, store, tranship and handle materials and equipment in accordance with Section 01 61 00 – Common Product Requirements.
- .2 Delivery and acceptance: deliver filter and armour stones of required calibres and dimensions with caution as to avoid damage to stones (cracks and fractures). Stones broken during handling (including unloading and placement) will not be paid and shall be quantified and then removed from site.

1.10 WEIGHING SYSTEM

- .1 Weighing machines
 - .1 In addition to specified requirements in articles 8.1.2 and 10.2.2.3. of the CCDG, Contractor must provide, install, operate and maintain at his/her expenses, a certified weighing machine of capacity suitable for total weight of vehicles used at each borrow site. The weighing platform must be of sufficient length for the entire vehicle to fit as to allow total weighing in a single try;
 - .2 Contractor must have all weighing machine components or weighing devices used by the firm be inspected by a certified organization every time the Departmental Representative demands it. Contractor must bear the expenses of such work;
 - .3 Noncompliance of specifications or terms of the present articles will automatically trigger the cancellation of the affected weighing tickets. The corresponding quantities will not be paid;
 - .4 Departmental Representative reserves the right to assess the work conducted by Contractor's weigher at any time.
- .2 Tare testing
 - .1 Contractor must submit to Departmental Representative the "Tare Testing" list on a daily basis which includes the following information:
 1. Contract number;
 2. Type of materials transported;
 3. Source (quarry) including location;
 4. Date and hour;
 5. Name of the owner of each truck;
 6. Licence number;
 7. Gross vehicle weight;
 8. Tare, with date and hour at which it was taken.
 - .2 This list must be signed and dated by the weigher.
- .3 Weighing tickets

- .1 Tickets (four [4] copies) to be issued by a printer. No change to the marking conducted by the printer shall be accepted.
 - .1 Original: Weigher @ truck driver @ Collector @ Departmental Representative (or Supervisor);
 - .2 1st copy: Weigher @ truck driver @ Collector @ Departmental Representative @ Contractor;
 - .3 2nd copy: Weigher @ truck driver @ Collector @ truck driver;
 - .4 3rd copy: Weigher @ Departmental Representative @ Owner of materials.
- .2 Weighing tickets must be sequential and include spaces to write down the following information:
 - .1 By Contractor's weigher:
 - .1 Date and hour of departure;
 - .2 Licence number;
 - .3 Gross weight;
 - .4 Empty weight (tare);
 - .5 Design mass;
 - .6 Contractor's name;
 - .7 Name of the truck owner;
 - .8 Source of material;
 - .9 Identification of material;
 - .10 Destination of material;
 - .11 Weigher's signature.
 - .3 By the Collector of the Contractor:
 - .1 Collector's signature;
 - .2 Hour of arrival.
 - .4 In no way can the system markings be altered to make the weighing ticket valid;
 - .5 If the weigher notices an error on the weighing tickets, he shall keep the ticket and write "CANCELLED" on it. The original ticket will be given to Departmental Representative with the Daily Report;
 - .6 The weigher cannot issue weighing tickets:
 - .1 If there is overload;
 - .2 If the rated capacity of the weighing machine was exceeded;
 - .3 As long as the load has not stabilized.
- .4 Daily report on transported materials
 - .1 Contractor must submit to Departmental Representative on a daily basis a computerized list "Daily Report on Transported Materials" for each source and per type of material, which must include the following information:
 1. Contract number;
 2. Contractor's name;
 3. Type of material transported;

4. Source;
 5. Destination of materials;
 6. Date;
 7. Ticket number;
 8. Licence number;
 9. Design mass or “CANCELLED” marking when required;
 10. Daily design mass total;
 11. Type (craftsman or Contractor);
 12. Daily design mass total per type and their percentage.
- .2 This list must be signed and dated by the weigher at the source.
- .3 The “Tare Testing” and “Daily Report of Transported Materials” lists must be produced on legal (8.5 x 14”) or letter (8.5 x 11”) paper and be marked with a sequential number.
- .5 Tasks of the weigher
- .1 Contractor’s weigher must perform the following tasks:
 1. For each truck, measure tare daily at different times from day to day and without prior notification to the truck drivers. The driver must be seated in the vehicle during measurement;
 2. Notify Departmental Representative when difference between various tares for a single truck exceeds 300 kg;
 3. Make sure no weight was added to the weighing machine to increase its capacity. Verify accuracy of machine several times a day with the zero setting test;
 4. Make sure the weighing machine is in good working condition and that its deck is always clean (no accumulation of materials which could result in inaccurate readings);
 5. Weigh all trucks. The driver must be in the truck during weighing;
 6. Fill in and sign weighing tickets in accordance with the numerical order;
 7. Keep the weighing tickets and therefore observe the numerical order.

Part 2 Products

2.1 GENERAL

- .1 All stones must comply with the complete range of requirements of the present Section of the specifications. Departmental Representative can at all times during the project duration, reject materials if they do not comply with the requirements.
- .2 As part of this project, the Stone Control Plan, as well as the QA and QC, must be automatically applied for all duration of work on site.

2.2 STONE QUALITY REQUIREMENTS

- .1 Stones must be weatherproof, resistant to degradation and disintegration in freeze/thaw conditions, exposition to water; they must be of quality that ensures their permanence in the structure in weather conditions they will be submitted to. Stones must be durable, solid and free of cracks, joints or any other flaws that could increase their degradation as a result of natural causes or that could cause the breakage of stone during handling and/or installation, or because of freezing. Are prohibited: inclusion of dirt, sand, clay, schist, quartz or mica, pegmatite, petroleum or stones soaked in petroleum, dust or stone dust, organic or deleterious matter, or any other matter soaked with petroleum.
- .2 Quarry stones that will be transported on site must comply with the laboratory requirements specified below, as well as the requirements listed in this Section of the specifications.
 - .1 50-200 mm stone
 - .1 Physical and mechanical properties of 50-200 mm revetment shall comply with MTQ 14501 “Enrochement et revêtement en pierres” (MTQ, volume VII, chap. 14);
 - .2 Relative density: min. 2.65, determined under test protocol ASTM C127;
 - .3 Water absorption: max. 1.5 %, determined under test protocol ASTM C127.
 - .2 700-900 mm stone
 - .1 Relative density: min. 2.65, determined under test protocol ASTM C127;
 - .2 Water absorption: max. 1.0%, determined under test protocol ASTM C127;
 - .3 Durability: wear by abrasion of max. 15 %, in accordance with test protocol ASTM D6928;
 - .4 Artificial gel (5 cycles MgSO4): min. loss of 5%;
 - .5 If stone is sedimentary in nature the presence of shale or other frost susceptible material makes it unacceptable;
 - .6 Shale stones are not accepted.
 - .3 50-200 mm alluvial stone
 - .1 Alluvium from borrow sources transported on site must comply with applicable laboratory requirements listed in this section of the specifications.

2.3 QUALITY TESTS REQUIRED FOR STONE FROM QUARRY

- .1 Inspection at borrow source site must include production of a written report comprising of a brief description of the quarry and the proposal of a development plan of the quarry pursuant to standard ASTM D4992. The report shall also include the overall lithology, geological unit and age of the formation, homogeneity of source, stratigraphic faces, metamorphic and alteration phases, dip, direction and thickness of rock stratum, suggested blasting procedure and expected duration of curing.
- .2 Relative density and water absorption tests must be conducted on five (5) different rock samples representative of the lithology observed in quarry.

- .3 The Micro-Deval abrasion test must be conducted on two (2) different rock samples representative of the lithology observed in quarry. The Micro-Deval abrasion test is not required for quarry run stones.

2.4 PARTICLE SIZE ANALYSIS AND SHAPE OF STONES

- .1 Quarry stones must be angular and cubic or short-oblong-shaped. Alluvial stones from borrow sources must be round-shaped.
 - .1 For 80% of stones, the largest dimension cannot exceed 2 times the smallest dimension of same stone;
 - .2 For 20% of stones, the largest dimension cannot exceed 2.5 times the smallest dimension of same stone;
 - .3 Stones whose largest dimension is 2.0 to 2.5 times the smallest dimension of same stone must be evenly distributed across the structures;
 - .4 Stones cannot possess a ratio which exceeds 2.5:1.
- .2 Methods employed for the production, transport and placement must be adapted to the needs so that materials placed in the final phase comply with specified weight parameters. Stones must be submitted to particle size analysis and cannot present discontinuity or flaws, in their own dimensional grades.
- .3 Grades of stones to purchase
 - .1 Armour stones, in accordance with the following grades:
 - .1 Min. diameter (D_{min}) = 700 mm;
 - .2 Median diameter (D_{50}) = 800 mm;
 - .3 Max. diameter (D_{max}) = 900 mm.
 - .2 Filter stones, in accordance with the following grades:
 - .1 Min. diameter (D_{min}) = 50 mm;
 - .2 Median diameter (D_{50}) = 125 mm;
 - .3 Max. diameter (D_{max}) = 200 mm.
 - .3 Round stones (alluvium), in accordance with the following grades:
 - .1 Min. diameter (D_{min}) = 50 mm;
 - .2 Median diameter (D_{50}) = 125 mm;
 - .3 Max. diameter (D_{max}) = 200 mm.
- .4 Sorting
 - .1 Each stone grade to be used shall be sorted and piled separately on worksite. Control stones, clearly identified depending on their weight and representative of the upper and lower limits of grade, must be permanently left near the sorting area as to facilitate sorting.
 - .2 Stones that do not comply with quality and size criteria must be moved outside the site.
- .5 Stone grade tolerances
 - .1 Stone size

- .1 Size of produced stones must comply with limits presented in article 2.4.3 of the present section;
- .2 At least 90% of stones from same grade are of size (length, width and height) within size limits of this grade;
- .3 Any stone whose size is lower than 0.75 times the minimum size or greater than 1.25 times the maximum size of grade in which it is sorted, shall be rejected and moved outside the worksite.
- .2 If the decision of Departmental Representative is contested regarding the rejection of stones, Contractor must demonstrate that said stones comply with the three (3) previous criteria, as well as the required quality criteria.
- .3 All stones broken during handling must be reassessed based on previous criteria.
- .4 Besides the base of the revetments, which can present larger stones, stones of a same layer must be evenly distributed in terms of size (within allowable values) over the entire revetment as to prevent the creation of areas with high concentration of stones of same size (either smaller or larger ones).
- .5 Contractor must bear all expenses related to transport, multiple weighing and measurement, and disposal of rejected stones.

Part 3 Execution

3.1 WORK EXECUTION

- .1 Water level, weather conditions and environmental requirements must be factored in at all times throughout duration of work.
- .2 Breakwaters must be installed according to the following steps:
 - .1 The surface to be covered is prepared in accordance with requirements specified on plans. The surface must be free of angular stones which could cause damage to the geomembrane;
 - .2 Install geomembrane over entire covered area of projected structure. Departmental Representative to have accepted in situ material at the bottom beforehand;
 - .3 Place 50-200 mm filter stones in accordance with slope and thickness specified on drawings for construction of temporary access road.
 - .1 Contractor to decide height and width of temporary road. However, a minimum freeboard of 300 mm between water level and temporary access road surface is required.
 - .4 Remove section of temporary road and profiling of 50-200 mm filter stones in accordance with slope and thickness specified on drawings;
 - .5 Place armour stones in accordance with slope and thickness specified on drawings.
 - .1 Keep larger calibre stones for use in revetment toes;

- .2 Stones must be placed one by one over one (1) layer in the slope as to get maximum overlap. Stones of elongated shape must be placed perpendicular to the structure's slope;
 - .3 Armour stones must be placed immediately after removal of temporary access road and grading of filter stone to prevent damage to the embankment caused by waves;
 - .4 The layers of armour stones must continue up to the top as to create a freeboard whose elevation is 21.8 m. The freeboard shall be composed of at least three (3) armour stones placed one behind the other as to reach a width of 2.4 m.
- .3 Shore nourishment must be conducted according to the following steps:
- .1 Place 50-200 mm angular stones in accordance with slope and thickness specified on drawings for construction of temporary access road along the shore.
 - .1 Contractor to decide height and width of temporary road. However, a minimum freeboard of 100 mm between water level and temporary access road surface is required.
 - .2 Remove section of temporary road and profiling of 50-200 mm stones in accordance with slope and thickness specified on drawings;
 - .3 Place alluvial stones on the surface in accordance with slope and thickness specified on drawings;
 - .4 Do not compact existing soils at projected elevation of shore;
 - .5 Contractor may reuse materials from removal of temporary structures as backfill material for permanent structures if such material complies with requirements in drawings and specifications of permanent structures and are approved by Departmental Representative. No particle smaller than 50 mm in diameter may be in the reused material.
- .4 Alignment and allowable variations:
- .1 Contractor to notify Departmental Representative for verification of alignment before starting placement of stones;
 - .2 Allowable variations with respect to specified grade lines are:
 - .1 Max. 150 mm, above or below, for the armour stone;
 - .2 Max. 75 mm, above or below, for the filter stone.
 - .3 Variations cannot always be above or always below grade and must have an average of theoretical grade. Contractor must hire a land surveyor to make sure of the elevations, alignments and slopes of structures to be built;
 - .4 Contractor must use equipment with calibrated GPS to place stones at location and grade specified. Any stone placed outside the limits and grades must be placed again in accordance with required grades and elevations, at the expense of Contractor;
 - .5 Contractor must regularly verify, together with a land surveyor, the elevations of each grade of stone and submit a copy of surveys to Departmental Representative. Any defects shall be corrected before the placement of the next grade of stones;

- .5 If a temporary protection has to be installed (storm, interruption due to limnometric variations, etc.), Contractor must resume work so to comply with final placement requirements specified on drawings and specifications.

3.2 QUALITY CONTROL DURING WORK

- .1 Contractor must carry out quality control throughout entire work duration in accordance with requirements of present Section and Section 01 45 00 – Quality Control.
- .2 If Departmental Representative casts doubt as the size of stones, or if inspector deems it appropriate, stones must be weighed or measured again as to confirm the results.
- .3 If Departmental Representative casts doubt as the quality or integrity of stones, or if the inspector deems it appropriate, fall testing may be performed. Proceed as follows:
 - .1 Visual inspection of all sides of stone and marking/counting of all existing cracks;
 - .2 Lift the stone and let it fall, from a height of 3 m, on a rigid surface (bedrock or stone of similar size);
 - .3 Visual inspection of all sides of stone and search of existing cracks (or cracks being formed);
 - .4 Repeat at least three (3) times, in accordance with directives from Departmental Representative;
 - .5 Stone is deemed acceptable for storage in pile if existing cracks did not open and that there is no formation of new ones. The fall testing cannot be used to have stones that were already deemed unacceptable based on the specifications requirements be accepted.
- .4 Contractor is notified that poor weather conditions (rain, snow, ice, freezing, etc.) can disguise or conceal flaws that would have otherwise been detected. Required inspection of stones or structures could have to be postponed to spring if winter conditions make it necessary.
 - .1 Should any delay in work occur, and weather conditions push inspections in 2020, Contractor shall be responsible for maintaining structure quality during winter or making corrections before inspections.
- .5 All broken or cracked stones, stones that do not meet particle size requirements or that were incorrectly placed in the structure must be removed, or removed and replaced with satisfactory stones, except when allowed by particle size tolerance. This corrective measure is at the expenses of Contractor. Rejected materials must be removed from site at once and excluded from the measurement for payment. Materials may also be recycled into other classes of material to be stockpiled if their characteristics are suitable.

3.3 CLEANING

- .1 Proceed in accordance with Section 01 74 11 – Cleaning.

END OF SECTION

APPENDIX 1
Photography Record

EAST SECTOR

APPENDIX - PHOTO

ÎLE AUX PLAINES – EAST SECTOR

EAST SECTEUR / PHOTOS TAKEN FROM THE LAKE SAINT-LOUIS



APPENDIX - PHOTO
ÎLE AUX PLAINES – EAST SECTOR

DSCN0817



Date: 11/26/2018 12:17:28 PM

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APPENDIX - PHOTO
ÎLE AUX PLAINES – EAST SECTOR

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APPENDIX - PHOTO
ÎLE AUX PLAINES – EAST SECTOR

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APPENDIX - PHOTO
ÎLE AUX PLAINES – EAST SECTOR

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APPENDIX - PHOTO
ÎLE AUX PLAINES – EAST SECTOR

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APPENDIX - PHOTO
ÎLE AUX PLAINES – EAST SECTOR

DSCN0872



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APPENDIX - PHOTO

ÎLE AUX PLAINES – EAST SECTOR

EAST SECTOR / PHOTOS TAKEN FROM THE ISLAND



APPENDIX - PHOTO
ÎLE AUX PLAINES – EAST SECTOR

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APPENDIX - PHOTO
ÎLE AUX PLAINES – EAST SECTOR

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APPENDIX - PHOTO
ÎLE AUX PLAINES – EAST SECTOR

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APPENDIX - PHOTO
ÎLE AUX PLAINES – EAST SECTOR

DSCN0983



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APPENDIX - PHOTO
ÎLE AUX PLAINES – EAST SECTOR

DSCN0988



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APPENDIX - PHOTO
ÎLE AUX PLAINES – EAST SECTOR

DSCN0993



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WEST SECTOR

APPENDIX - PHOTO

ÎLE AUX PLAINES – WEST SECTOR

WEST SECTOR / PHOTOS TAKEN FROM THE LAKE SAINT-LOUIS



APPENDIX - PHOTO
ÎLE AUX PLAINES – WEST SECTOR

DSCN0879



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APPENDIX - PHOTO
ÎLE AUX PLAINES – WEST SECTOR

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APPENDIX - PHOTO
ÎLE AUX PLAINES – WEST SECTOR

DSCN0889



Date: 11/26/2018 12:55:55 PM

DSCN0893



Date: 11/26/2018 12:56:27 PM

APPENDIX - PHOTO
ÎLE AUX PLAINES – WEST SECTOR

DSCN0895



Date: 11/26/2018 12:58:38 PM

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Date: 11/26/2018 1:02:10 PM

APPENDIX - PHOTO
ÎLE AUX PLAINES – WEST SECTOR

DSCN0904



Date: 11/26/2018 1:05:17 PM

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APPENDIX - PHOTO
ÎLE AUX PLAINES – WEST SECTOR

DSCN0909



Date: 11/26/2018 1:06:31 PM

APPENDIX - PHOTO

ÎLE AUX PLAINES – WEST SECTOR

WEST SECTOR / PHOTOS TAKEN FROM THE ISLAND



APPENDIX - PHOTO
ÎLE AUX PLAINES – WEST SECTOR

DSCN0912



Date: 11/26/2018 1:10:47 PM

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Date: 11/26/2018 1:12:43 PM

APPENDIX - PHOTO
ÎLE AUX PLAINES – WEST SECTOR

DSCN0926



Date: 11/26/2018 1:17:32 PM

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Date: 11/26/2018 1:17:36 PM

APPENDIX - PHOTO

ÎLE AUX PLAINES – WEST SECTOR

DSCN0933



Date: 11/26/2018 1:20:21 PM

DSCN0936



Date: 11/26/2018 1:27:29 PM

APPENDIX - PHOTO
ÎLE AUX PLAINES – WEST SECTOR

DSCN0937



Date: 11/26/2018 1:27:34 PM

DSCN0942



Date: 11/26/2018 1:29:38 PM

APPENDIX - PHOTO
ÎLE AUX PLAINES – WEST SECTOR

DSCN0944



Date: 11/26/2018 1:30:06 PM

DSCN0948



Date: 11/26/2018 1:32:10 PM

APPENDIX - PHOTO

ÎLE AUX PLAINES – WEST SECTOR

DSCN0951



Date: 11/26/2018 1:32:53 PM

DSCN0955



Date: 11/26/2018 1:33:59 PM

APPENDIX - PHOTO
ÎLE AUX PLAINES – WEST SECTOR

DSCN0957



Date: 11/26/2018 1:34:55 PM

DSCN0960



Date: 11/26/2018 1:36:00 PM

APPENDIX 2
Mitigation Measures

Part 1 General

1.1 SURFACE WATER AND SEDIMENT

.1 Spill

- .1 Inspect equipment and machinery before introduction to site. In case of leakage, repair at once or exclude machinery from site;
- .2 Conduct general maintenance and refuelling of machinery where identified by the On-site Supervisor;
- .3 All machinery and equipment used on or less than 20 m from the high water mark (HWM) of a watercourse to use hydraulic oil with: bio-based content of at least 80% and biodegradability certified under standard OECD B301, or equivalent ($\geq 60\%$ biodegradability at 28 days); Contractor to take necessary measures to fully drain machinery before replenishment with vegetable or biodegradable oil; maximum 5% of residual oil shall be permitted;
- .4 Take necessary measures so that containers and portable and mobile tanks the Contractor uses comply with manufacturing standards specified under Petroleum Products Regulation (L.R.Q., chapter P-29.1, r.2);
- .5 Store and handle hazardous materials and waste in accordance with federal and provincial laws, regulations, codes and guidelines;
- .6 Provide and keep an emergency spill kit (portable bag) in all equipment used on site. Kits to minimally include: sorbents (wipes, socks, peat moss, etc.), recovery bags and shutters (mats, epoxy paste, etc.). Place properly identified leakproof containers on site to receive petroleum residue and waste in case of spill;
- .7 Contractor to place an emergency kit for the recovery of petroleum products (barrels) in every area where work is conducted. Kit to include enough sorbent rolls for intervention in watercourse to contain petroleum products within the perimeter of the faulty machinery with a boom;
- .8 Implement a spill prevention and response plan. Clearly identify people and organizations in charge, as well as procedure to follow in case of environmental emergency. Provide an environmental protection plan, as specified in the specifications;
- .9 Notify the following authorities in case of any spill having environmental impacts: Climate Change Canada's National Environmental Emergencies Centre (1-866-283-2333) and Urgence Environnement du Québec (1-866-694-5454). Recover contaminated materials, when necessary, and dispose of with agency approved by the ministère de l'Environnement et de la Lutte contre les changements climatiques (MELCC);
- .10 Develop and submit fire safety plan to the Beauharnois Fire Department;
- .11 Sediment barriers, or any other more effective method approved by the MELCC, shall be installed around the work areas as to protect surface water and sewer system. Inspect barriers regularly to ensure their good operation;

- .12 Contractor to plan work as to protect the surroundings of bodies of water against erosion and gullyng and to limit sediment transport to Saint-Louis Lake. Temporary accesses on the shoreline shall also be stabilized if they cause introduction of sediments in bodies of water;
 - .13 Unless otherwise indicated by the Departmental Representative, remove temporary measures against erosion and sediment transport once work is completed;
 - .14 Do not discharge in watercourse pumping and drainage water, or water from any other source or activity, containing suspended solids beyond the Canadian Council of Ministers of the Environment (CCME) standard, meaning a rise of 25 m/l compared to ambient concentration;
 - .15 Contractor to present a water management method to demonstrate that water drained or pumped to a watercourse, sewer system or drainage system does not contain suspended solid concentration beyond permitted thresholds;
 - .16 Regularly inspect work areas as to detect signs of erosion and fine particle transportation to watercourses; Implement suitable mitigation measures at once;
 - .17 Work within the 10-m riparian strip (measured from the high water mark – HWM) is forbidden.
- .2 **Suspended Solids – Work in Water**
- .1 Granular material added to aquatic environments to be clean;
 - .2 Install a turbidity curtain downstream, parallel to temporary jetties and around the breakwater construction areas;
 - .3 Put down materials directly on the watercourse bed instead of emptying the content of the bucket during its descent;
 - .4 During maneuvers, Contractor to reduce descent and ascent speed of the hydraulic shovel and avoid putting down the bucket on the watercourse bed to level work surfaces;
 - .5 To the extent possible, comply with maximum suspended solid concentration, which is 25 mg/l greater than ambient concentrations, 100 m downstream of Work. If an increase greater than 25 mg/l above ambient concentrations is measured, the Departmental Representative shall convene a site meeting with the Contractor to discuss required measures to be taken to quickly rectify the situation. The rate at which materials is placed in the water shall be reduced and a temporary suspension of work could be required if the measure does not allow achievement of the maximum threshold. Work will resume only after measured concentrations are similar to ambient concentrations (background noise);
 - .6 Contractor to present work method which demonstrates that everything was done to comply with suspended solid concentrations below 25 mg/l above the watercourse ambient concentration;
 - .7 Watercourses to remain free of waste materials and debris.

1.2 AIR QUALITY

- .1 Use well-maintained heavy machinery and equipment in good working order in accordance with operating characteristics. Inspect such equipment before introduction on site.

- .2 Use dump trucks (watertight or standard bed, depending on the needs) covered with a tarp as to limit dispersal of fine particles in the air.
- .3 Cover or wet down dry materials and rubbish to prevent blowing dust and debris.
- .4 Provide watering of stones on site in case their handling is to generate too much dust.
- .5 Restrict traffic of machinery to preferred routes within the work area and prohibit traffic of heavy machinery outside the specified areas.
- .6 Comply with speed limits, as well as permitted loads, as to preserve the quality of the road network and reduce noise and dust emission.
- .7 Use dust control liquid on site if needed: no hygroscopic salt-based dust control liquid shall be authorized on site within 50 metres of Saint-Louis Lake (BNQ 2410-300). Surfaces within this area shall be treated with water only. During the summer, Contractor to regularly water bare surfaces (developed road, worksite area).
- .8 Clean roadways used if necessary.
- .9 Equip vehicles with operational anti-pollution exhaust system.
- .10 If possible, turn off engines of gas-powered equipment and vehicles when not being used.
- .11 Comply with the following criteria regarding fine and total particle emission:
 - .1 **Fine particles (2.5 µm):** 3 hours (35 µg/m³; Environment Canada), 24 hours (30 µg/m³; Appendix K – Clean Air Regulation);
 - .2 **Total suspended particles:** 1 hour (300 µg/m³; Clean Air Regulation which replaces regulations 44 and 44-1 of the *Communauté métropolitaine de Montréal*), 8 hours (190 µg/m³; Clean Air Regulation which replaces regulations 44 and 44-1 of the *Communauté*).

1.3 TERRESTRIAL AND RIPARIAN VEGETATION

- .1 Comply with municipal regulations for trees.
- .2 If applicable, comply with municipal regulations regarding building permits to be obtained (backfilling/excavation).
- .3 Deforestation is prohibited.
- .4 Ensure protection of existing trees and plants.
- .5 Avoid unnecessary traffic, dumping and storage of materials over root zones of protected trees.
- .6 Contractor to make sure to gather any unnecessary equipment or debris produced by Work.

1.4 WETLANDS AND AQUATIC VEGETATION

- .1 Take necessary measures to protect riparian wetlands and aquatic grass beds in the study area (protection against mechanical degradation or high suspended solid concentration).
- .2 Contractor to minimize traffic of watercraft between work areas specified in contract as to avoid disturbance to areas outside the work perimeter.

- .3 If degradation of wetland or grass bed outside the perimeter occurs, Contractor to provide PWGSC with a site remediation plan for approval.

1.5 INVASIVE ALIEN SPECIES

- .1 In order to prevent the spread of invasive species (common reed, purple loosestrife, reed phalaris), no machinery may access the island.
- .2 All equipment used to be clean and free of soil or other plant material.
- .3 If soil has to be imported on the island, it shall be free of invasive alien species.
- .4 Before start of work, a map showing the location of listed invasive alien species shall be provided to the Contractor. Work in areas with invasive alien species is prohibited without prior authorization by the On-site Supervisor. Machinery shall be properly cleaned immediately after work in areas where invasive alien species are present.
- .5 Any stripped topsoil with invasive species seed bank shall be transported to a MELCC's authorized site.
- .6 Contractor shall prove that the floating equipment is free of invasive species:
 - .1 For equipment cleaned and stored on land just before Work, Contractor to only be required to provide Departmental Representative with a written list of such equipment, including location of storage and expected date of introduction into the water. Departmental Representative to be able to verify if equipment was indeed clean and stored on land before execution of Work;
 - .2 For equipment already in the water, Contractor to prove that it remained in the immediate vicinity of the Montreal Island over the past twelve (12) months, or more, otherwise the Contractor to:
 - .1 Provide written inspection report just before mobilization of equipment to the worksite certifying that equipment is free of invasive species. Report to be produced by a biologist specialized in the identification of fresh water aquatic fauna. Sampling to be conducted by divers. Report to include, but not be limited to the following information: list of inspected equipment (tug-boats, barges, etc.), date and location of inspection, summary of sampling and identification procedures, list of samples, table of results and certification regarding the presence or absence of invasive species. Report to contain photographs and be signed by the qualified biologist before being submitted to the Project Manager together with other required contract documents, and before mobilization of equipment to the worksite;
 - .2 In the event that the inspection report confirms the presence of invasive species, Contractor is required to replace the equipment or to proceed, at his own expenses, to the complete cleaning of the equipment. Description of the cleaning work done shall be included in the Biologist's new inspection report (post-cleaning) together with all the relevant information mentioned above;
 - .3 Departmental Representative reserves the right to conduct a counter-assessment at any time.

- .7 In the event that invasive species are observed, Contractor shall stop work and proceed, at his own expenses, to the cleaning of affected equipment and follow the procedure mentioned above.

1.6 WILDLIFE AND AQUATIC HABITAT

- .1 Comply with the annual restriction period for work in water, which is from March 15th to June 15th. This period is meant to protect the spawning of fresh water species and early spawners, egg-laying of turtles and bird nesting.
- .2 If turtle nests are discovered, and after authorization by the Departmental Representative, implement a buffer zone fully surrounding the nest.
- .3 Permanent encroachment upon the islands is not authorized. No machinery may access the island. Special attention shall be paid to prevent impact on beach areas located above embankments which may be used as turtle egg-laying sites.
- .4 Implement all mitigation measures to protect water quality (potential accidents, suspended solids, during work on land and in rivers).
- .5 Contractor to take all necessary measures to protect riparian wetlands and aquatic grass beds within the study area (protection against mechanical degradation or high suspended solid concentration).
- .6 Contractor to restrict traffic of watercraft to work areas specified in contract to avoid disturbance to areas outside the work perimeter (grass bed).
- .7 If degradation of wetland outside the perimeter occurs, Contractor to provide PWGSC with a site remediation plan for approval.
- .8 Rigorously implement all mitigation measures meant to prevent the spread of invasive alien species.
- .9 Blocks which hinder traffic of barges may be removed for the duration of Work. They shall be put back in the same location once Work completed. The location of each block to be surveyed before and after relocation.
- .10 When removing temporary jetties, Contractor shall leave 700-900 mm blocks within the jetty right-of-ways, i.e. 10 blocks within the West jetty right-of-way and 5 blocks within the East jetty right-of-way. Contractor to present proposed location of each block to the Departmental Representative before proceeding.

1.7 AVIFAUNA

- .1 No machinery shall access the island.
- .2 Avoid the impact noise of dump truck rear panels and implement material unloading methods which limit impact noise.
- .3 Turn off any electric or mechanic equipment that is not being used.
- .4 Use equipment which generates reduced noise. Make sure equipment used is equipped with a muffler of good quality and in proper working condition.
- .5 If a female duck and her brood are present on the work premises, Contractor must wait for them to leave the site on their own before beginning Work.

- .6 If migratory birds are present on the work premises, Contractor must wait for them to leave the site on their own before beginning Work.
- .7 Contractor to make sure no active nest is present before beginning Work.
- .8 Upon discovery of a nest, and after authorization by the Departmental Representative, implement a buffer zone the nest.

1.8 QUALITY OF LIFE

- .1 Soundscape
 - .1 Contractor to provide a soundscape management plan which specifies measures to maintain sound to a level which comply with MELCC's criteria during Work;
 - .2 Work to be conducted in accordance with schedule which complies with regulation in force;
 - .3 Departmental Representative to implement communication procedure for information of citizens regarding site noise management and formulation of complaints or comments where applicable;
 - .4 Guidelines with respect to noise level originating from an industrial construction site established by the MELCC shall be implemented:
 - .1 All feasible and reasonable measures shall be taken by Contractor so that the reference noise level (12h) coming from the construction site is equal to or below the following highest noise level: 55 dB or the initial noise level if higher than 55 dB. This limit applies to all receiving points for residential use, or equivalent (hospital, institution, school);
 - .2 It was agreed that there are situations where constraints are such that the Contractor cannot conduct Work while complying with these boundaries. If so, Contractor to:
 - .1 Provide for, identify and limit these situations as far as possible in advance;
 - .2 Specify the nature of work and sources of noise in question;
 - .3 Defend the construction methods used in relation to available alternatives;
 - .4 Demonstrate that all reasonable and feasible measures are taken to minimize the extent and duration of exceedance;
 - .5 Estimate the extent and duration of foreseen exceedance;
 - .6 Plan for monitoring measures to assess the actual impact of these situations and take necessary remedial actions.
 - .5 Use equipment which generates reduced noise. Make sure equipment used is equipped with a muffler of good quality and in proper working condition;
 - .6 Whenever possible, place noisy equipment far from sensitive zones (homes);
 - .7 Maintain access roads level as to reduce truck impact noise;
 - .8 Implement back-up alarms with volume that vary according to surrounding noise levels;
 - .9 Restrict the use of compression release engine brakes to emergency situations;

- .10 Turn off any electric or mechanic equipment that is not being used;
- .11 Avoid the impact noise of dump truck rear panels and implement material unloading methods which limit impact noise.
- .2 Cleanliness
 - .1 Throughout Work, and if necessary, clean roadways used by vehicles and machinery to ensure their cleanliness;
 - .2 Contractor to make sure to recover and remove any unnecessary equipment or waste produced during Work on Îles de la Paix.
- .3 Traffic and safety management
 - .1 Contractor to present traffic control plan for approval no more than ten (10) working days following award of Contract. Plan to include measures to minimize hindrance to traffic during peak hours and consider other worksites projected in the surroundings during the work period;
 - .2 Contractor to provide measures to reduce scouring due to heavy-vehicle traffic, especially during rainy weather;
 - .3 Restrict traffic of machinery to preferred routes within the work area and prohibit traffic outside the specified areas;
 - .4 Comply with speed limits, as well as permitted loads, as to preserve the quality of the road network and reduce noise and dust emission.

1.9 RECREATIONAL ACTIVITIES

- .1 Contractor (or INFC) to issue public notices as to keep the population informed of work stages which affect the aquatic environment in order to limit disruption of recreational fishing, hunting and navigation. For instance, signs shall be installed at the various access points to the water within the project area.
- .2 Contractor to issue Notices to Shipping as to inform recreational boaters of Work.
- .3 The St. Lawrence Seaway shall not be impeded during Work.
- .4 Contractor to clearly mark out the work area.
- .5 Contractor to provide 24/7 access to Canadian Coast Guard teams responsible for waterway marking. Dates for marking are usually between May 15th and June 15th, and after October 15th for removal.

1.10 ARCHAEOLOGY

- .1 All work recognized as possibly containing archaeological remains may be subject to supervision by an archaeologist if designated by the Departmental Representative.
- .2 If discoveries are made during work, the following measures must be complied with:
 - .1 Contractor to notify Departmental Representative of any archaeological discovery (remains of structures or buildings, objects and fragments of objects) made on the premises and wait for his written instructions before proceeding with work where the discovery was unearthed;
 - .2 Remains, antiques and other items of historical, archaeological or scientific interest (remains, object or fragments of object) discovered on site remain the

property of Canada. Contractor to protect such discoveries and receive guidelines from the Departmental Representative to that extent.

END OF SECTION

APPENDIX 3

Site Hydrodynamic Conditions and Water Level Statistics

1. INTRODUCTION

This appendix outlines design parameters for the proposed developments, including water level statistics and hydrodynamic conditions to be considered at the site under study. As we know, these developments involve building breakwaters near the shore. The heights of these breakwaters will permit wave overtopping during high-water periods. The beach between the breakwater and the shore has been recharged and planted with vegetation to stabilize it and create wetlands.

2. WATER LEVELS AT SITE UNDER STUDY

2.1 Analysis of Water Levels

The flow of the St. Lawrence River (and Lake Saint-Louis) is regulated in the Îles de la Paix sector. Flow velocities—and, consequently, water levels—depend on the regulation of outflows from Lake Ontario at the Moses-Saunders Power Dam. Since January 2017, the new Bv7 regulation plan has been applied to defining dam operating rules.

The Hydrology and Ecohydraulic Section (HES) conducted statistical studies of Lake Saint-Louis water levels in 2017 (ECCC, 2017). These studies were based on mean daily water level figures from the Pointe-Claire (02OA039) and Pointe-des-Cascades (02MC005) water level stations. The Pointe-Claire station is 11 km downstream from Île aux Plaines and the one at Pointe-des-Cascades is 10 km upstream of the island, placing Île aux Plaines midway between the two.

Water levels have been measured at these locations since the 1910s. The HES studies, however, are based on more recent data, from 1960 to 2016, since the St. Lawrence Seaway opened. Water levels are listed in the 1985 IGLD (International Great Lakes Datum). The Datum of Mean Sea Level at Pointe-Claire is virtually identical to the 1985 IGLD, the difference being barely 0.001 m.

Table 2.1 presents average monthly means at both stations. The mean value between the stations is a good approximation of the level at Île aux Plaines. Generally, the difference between the two stations is about 10 cm, so we would add 5 cm to the level measured at Pointe-Claire to obtain the level at Île aux Plaines. This assumption was confirmed during readings taken between November 13 and 17, 2017, when the water level measured at Île aux Plaines was 21.71 m (generally stable over the period), with the level at Pointe-Claire ranging from 21.65 m to 21.67 m and the level at Pointe-des-Cascades, from 21.73 m to 21.76 m. In high-water periods, however, the difference between the two stations is greater. Conservatively, 10 cm of height is added to the level measured at Pointe-Claire in calculating that at Plaines under these conditions.

Table 2.2 presents typical Lake Saint-Louis water characteristics at the Pointe-Claire station, as calculated by HES and evaluated by WSP. According to HES, flood levels have remained similar despite a 1970 change in the water regulation plan for Lake Ontario and the St. Lawrence River (International Joint Commission, 2014).

It should be noted that **the high-water levels calculated by HES are considered low** because they include data for the 1960s, a period characterized by very low water levels. If we exclude 1960 to 1970 data, the 2-year flood level of 22.18 m, based on studies by WDP, is **7 cm higher** than the 2-year flood

level calculated by HES. In the case of a 20-year flood, the difference is similar, with WSP's flood level calculated at 22.72 m, or 6 cm higher than HES figures. The monthly mean level is 21.37 m at Pointe-Claire and 21.42 m at Île aux Plaines.

Table 2.1 Monthly Minimum, Maximum and Mean Levels of Lake Saint-Louis from 1960 to 2016 at the Pointe-Claire and Pointe-des-Cascades Stations

| MONTH | POINTE-CLAIRE WATER LEVEL | | | POINTE-DES-CASCADES WATER LEVEL | | |
|-----------|---------------------------|-------|-------|---------------------------------|-------|-------|
| | MIN. | MAX. | MEAN | MIN. | MAX. | MEAN |
| January | 20.45 | 22.05 | 21.30 | 20.56 | 22.24 | 21.41 |
| February | 20.30 | 22.24 | 21.35 | 20.44 | 22.38 | 21.47 |
| March | 20.09 | 22.74 | 21.36 | 20.29 | 22.81 | 21.48 |
| April | 20.11 | 22.80 | 21.67 | 20.31 | 23.04 | 21.74 |
| May | 20.39 | 22.75 | 21.58 | 20.43 | 22.83 | 21.64 |
| June | 20.36 | 22.48 | 21.36 | 20.44 | 22.52 | 21.44 |
| July | 20.36 | 22.19 | 21.25 | 20.46 | 22.28 | 21.34 |
| August | 20.43 | 22.02 | 21.19 | 20.53 | 22.11 | 21.31 |
| September | 20.43 | 21.94 | 21.14 | 20.54 | 22.06 | 21.25 |
| October | 20.42 | 22.14 | 21.13 | 20.42 | 22.27 | 21.23 |
| November | 20.32 | 22.10 | 21.19 | 20.42 | 22.20 | 21.25 |
| December | 20.32 | 22.20 | 21.22 | 20.40 | 22.26 | 21.29 |

Table 2.2 Typical Water Characteristics of Lake Saint-Louis at Pointe-Claire According to HES and WSP

| EVENT | WATER LEVELS WITH THE CURRENT REGULATION PLAN | |
|-------------------------|---|--|
| | 1958D-1960 to 2016 (m) | 1970-2016 (m) (Values used by WSP) |
| 2-year flood | 22.11 | 22.18 |
| 20-year flood | 22.66 | 22.72 |
| 2-year low water level | 20.70 ¹ | 20.88 ² |
| 10-year low water level | N/A | 20.60 ² |
| 20-year low water level | 20.43 ¹ | 20.52 ² |

Note 1: Daily value.

Note 2: Mean value over seven days.

2.2 Exceedance Probability

Exceedance probabilities of Lake Saint-Louis water levels in the Îles de la Paix sector appear in Table 2.3.

Table 2.3 Exceedance Probabilities of Lake Saint-Louis Water Levels at Îles de la Paix

| EXCEEDANCE PROBABILITY (%) | WATER LEVEL (M) BY PERIOD * | | | | | |
|----------------------------------|-----------------------------|-------|--------|-----------|---------|----------|
| | July 1-Nov. 30 | July | August | September | October | November |
| Maximum measured | 22.53 | 22.53 | 22.07 | 21.99 | 22.19 | 22.15 |
| 1 | 22.05 | 22.27 | 21.97 | 21.84 | 21.90 | 22.01 |
| 2 | 21.98 | 22.17 | 21.92 | 21.80 | 21.83 | 21.97 |
| 5 | 21.85 | 22.04 | 21.87 | 21.74 | 21.74 | 21.88 |
| 10 | 21.73 | 21.89 | 21.77 | 21.65 | 21.65 | 21.74 |
| 20 | 21.57 | 21.65 | 21.54 | 21.51 | 21.53 | 21.62 |
| 50 | 21.30 | 21.43 | 21.32 | 21.25 | 21.23 | 21.33 |
| 80 | 21.01 | 21.05 | 21.05 | 21.00 | 20.97 | 20.96 |
| 90 | 20.85 | 20.88 | 20.91 | 20.83 | 20.85 | 20.81 |
| 95 | 20.72 | 20.78 | 20.70 | 20.70 | 20.71 | 20.72 |
| 98 | 20.68 | 20.71 | 20.67 | 20.67 | 20.68 | 20.68 |
| 99 | 20.66 | 20.68 | 20.66 | 20.65 | 20.66 | 20.67 |
| Minimum measured | 20.58 | 20.63 | 20.63 | 20.58 | 20.59 | 20.63 |

* Based on daily levels at federal station 02OA039, increased by 5 cm for the estimated level at Îles de la Paix. Federal station 02OA039 is the same as MDDELCC station 000091.
 Analysis based on daily data from 1970 through 2017.

Continuous water levels at station 000091 (02OA039) are shown at:
www.cehq.gouv.qc.ca/suivihydro/graphique.asp?NoStation=000091

2.3 Changes in Daily Water Level

The probabilities of daily changes in water levels in the Îles de la Paix sector of Lake Saint appear in Table 2.4.

Table 2.4 Exceedance Probabilities of Daily Changes in Water Levels of Lake Saint-Louis at Îles de la Paix

| EXCEEDANCE PROBABILITY (%) | CHANGE IN WATER LEVEL (m) |
|----------------------------|---------------------------|
| Maximum measured | 0.37 |
| 1 | 0.14 |
| 2 | 0.11 |
| 5 | 0.08 |
| 10 | 0.05 |
| 20 | 0.03 |
| 50 | 0.00 |
| 80 | -0.04 |
| 90 | -0.05 |
| 95 | -0.07 |
| 98 | -0.10 |
| 99 | -0.11 |
| Minimum measured | -0.23 |

* Based on the daily average levels of federal station 02OA039.
 Analysis based on daily data from 1970 through 2017.

Twenty-one daily increases of 20 cm or more were measured over the period considered in the analyses (July to November, 1970 through 2017).

3. ICE THICKNESS

Ice thickness can be estimated using Stefan's Law, which expresses the thickness of the cover according to the characteristics of the freezing season:

$$h = B \times \sqrt{G}$$

where G is the number of accumulated Freezing Degree Days and B is an experimental coefficient that can take different values according to various site parameters (lake or river, snow cover).

Since Lake Saint-Louis is highly exposed to wind, a B value of 2.5 (close to the recommended maximum of 2.7 for maximum exposure in a lake free of snow) was used. The number of Freezing Degree Days of the area under study was calculated in the course of other projects conducted in the area by WSP. The average was about 750 C°-days, while it was about 1000 C°-days for a 20-year return period. The ice cover's thickness can accordingly be estimated as a mean 69 cm, and 79 cm for a 20-year return period.

4. HYDRODYNAMIC CONDITIONS

Flow velocities in the Îles de la Paix sector depend on water level and wave climate. Under normal conditions, velocities are generally less than 0.4 m/s

4.1 Reconstitution of a Wave Climate in the Zone Under Study

An altered wave climate at the site under study was generated using Environment and Climate Change Canada (ECCC) modelling results, along with wind time series and water level data.

Analysis of the reconstituted wind time series in the zone under study (Figure 4.1) demonstrates that most storms generate wave heights of 70 cm to 90 cm. More specifically, there were very few events that produced waves higher than 90 cm. Waves higher than 70 cm made up less than 1% of the events (88 hours per year). A wave rose (Figure 4.2) was created by classifying these values by magnitude and direction. Waves with the highest amplitudes come from the west, west-northwest, north and north-northeast.

In the case of a body of water regulated under a regulation plan (CMI, 2014), it is fairly unlikely that climate change will have a major impact on maximum water levels at the site under study. Under these circumstances, we expect the wave climate to remain similar to that presented in Figure 2.1, for the breakwater's service life, since wave heights are generally limited by water depth.

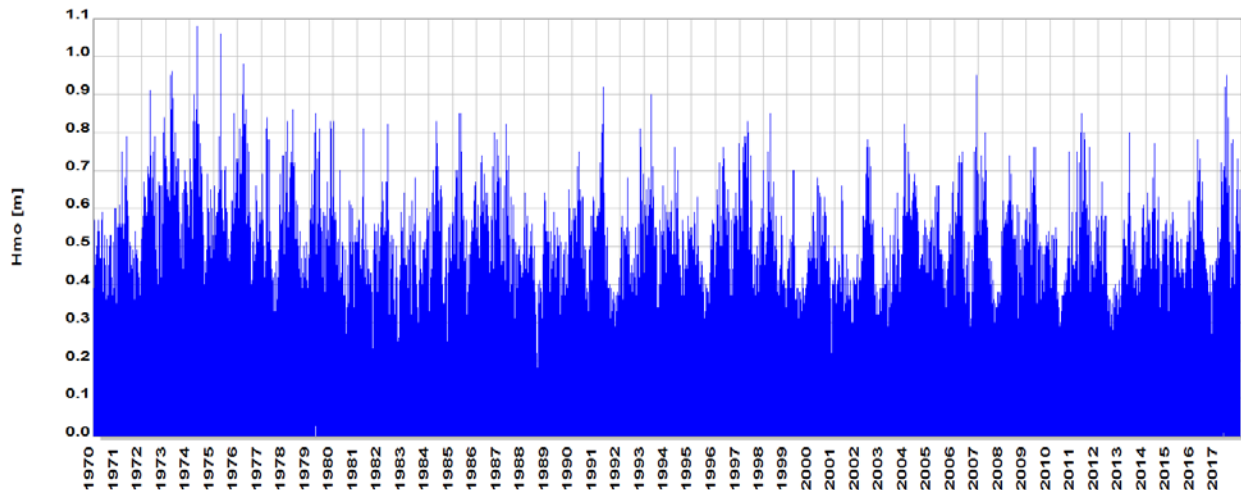


Figure 4.1 Hourly Series of Incident Waves Reconstituted in the Breakwater Installation Area

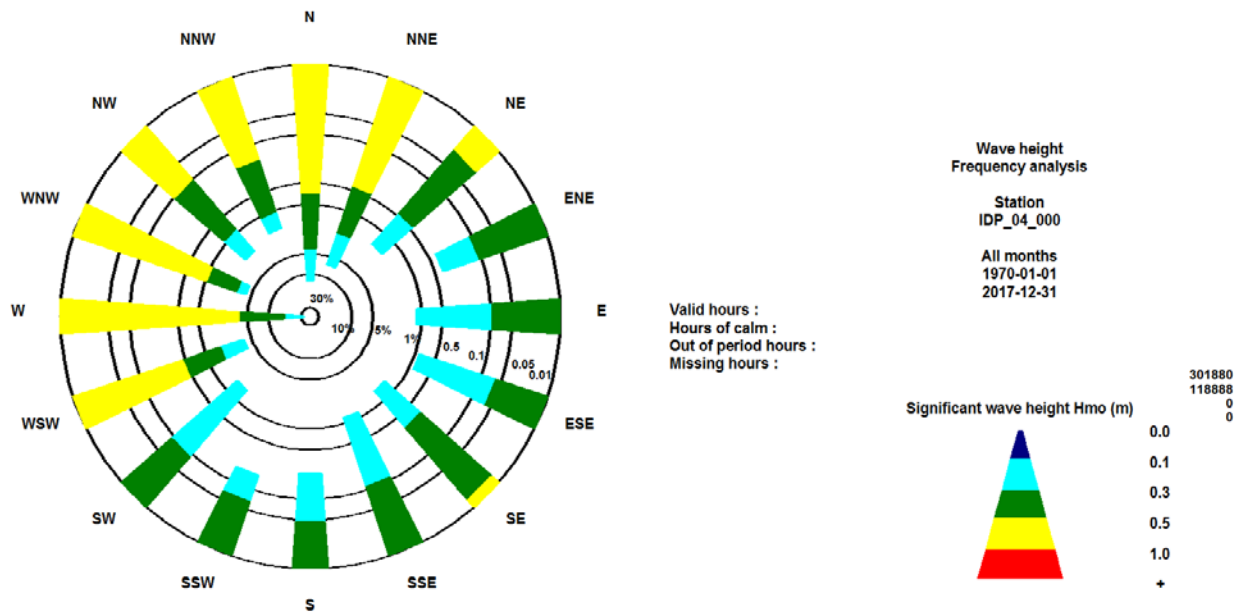


Figure 4.2 Incident Wave Rose in the Breakwater Installation Area

4.2 Currents Generated by Waves

Figure 4.3, below, illustrates currents generated by wave overwash during an annual storm from the west, when the island is above water (with and without breakwaters).

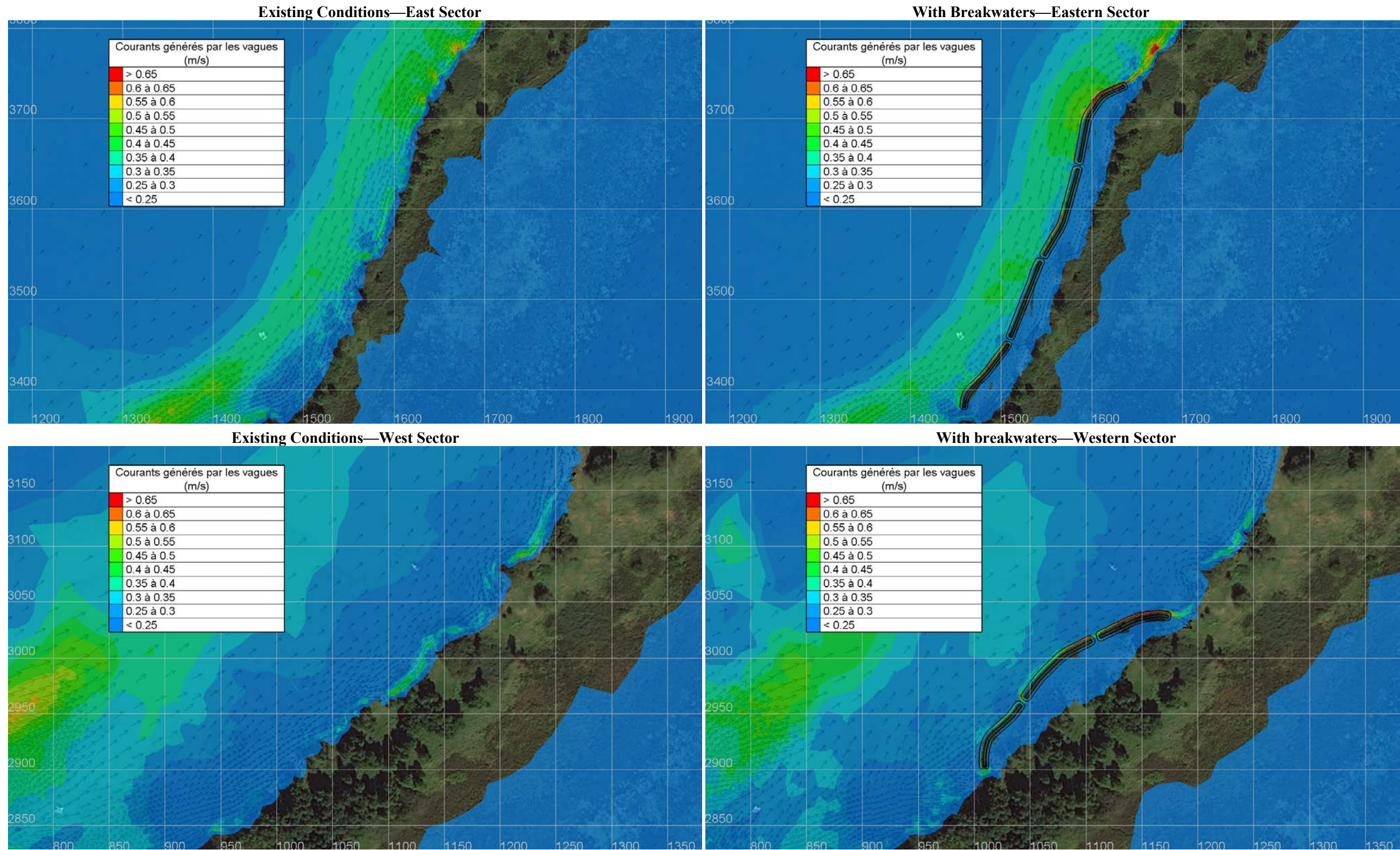


Figure 4.3 Currents Generated by Wave Overwash During an Annual Storm from the West when the Island is Above Water

5. NOTABLE CORRELATIONS

5.1 Water Level—Wind Speed

Our analysis of water levels and wind velocities over water showed that strong winds have a slight tendency to occur when levels are lowest, as in the fall and winter (Figure 5.1). The strongest winds occur primarily when water levels at Pointe-Claire are between 21.0 m and 21.5 m. Furthermore, the ECCC's simulation scenarios are limited to a wind velocity of 85 km/h, but wind velocities over water exceeded this figure for 78 hours. This was due to the fact that the ECCC calculated the 85 km/h value based on maximum velocities recorded at the airport station, while WSP used a wind-over-water series by amplifying wind at the station using wind-over-land to wind-over-water conversion factors (see the appendix to this technical note). Consequently, wave heights calculated according to the space solutions corresponding to these 78 hours of extreme winds may have been slightly underestimated. This issue will be considered in sizing the final design.

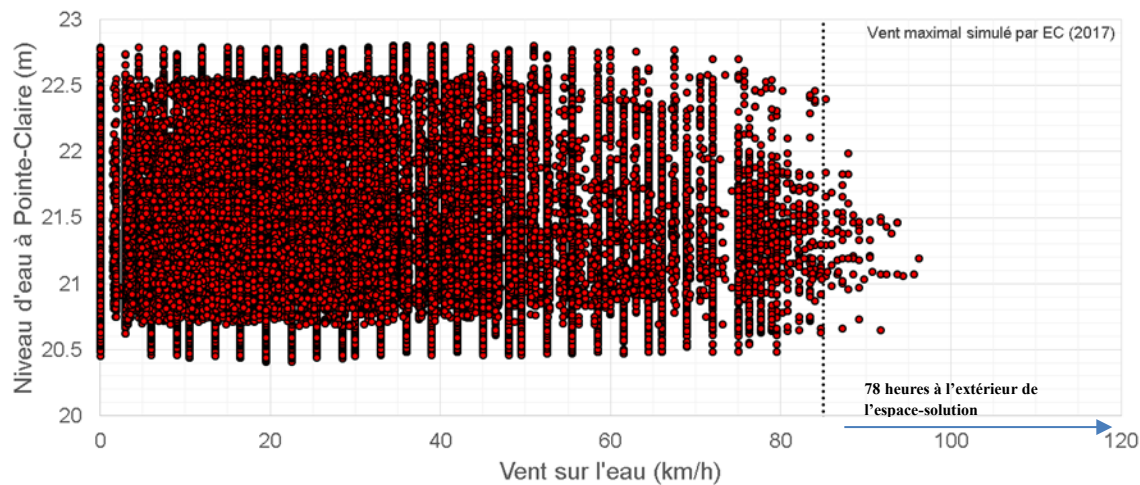


Figure 5.1 Water Level/Wind Speed Correlations

5.2 Water Level—Altered Wave Height

Figure 5.2 presents correlations between water levels at Pointe-Claire and incident wave heights in the zone of interest. We can see that for the period from 1970 through 2017, water levels at Pointe-Claire never exceeded 22.8 m. There is also a clear distinction between waves limited—or not—by depth. Heights of the strongest incident waves in the zone of interest were greater than 1 m, only occurred very rarely before the 1980s and correspond with the depth-limited wave trend.

It is also apparent that the island is submerged about 20% of the time. Under these circumstances, ECCC simulations show that waves at the zone under study may come from any direction. For example, some of these waves come from the southeast and pass the island before reaching the northwest shoreline. ECCC modelling clearly demonstrates wave attenuation at the island due to its reduced depth. In other words, it is likely that the ECCC failed to consider wave attenuation caused by the island's vegetation. Consequently, wind-generated waves coming from the southeastern sector ($\pm 45^\circ$) may have been overestimated.

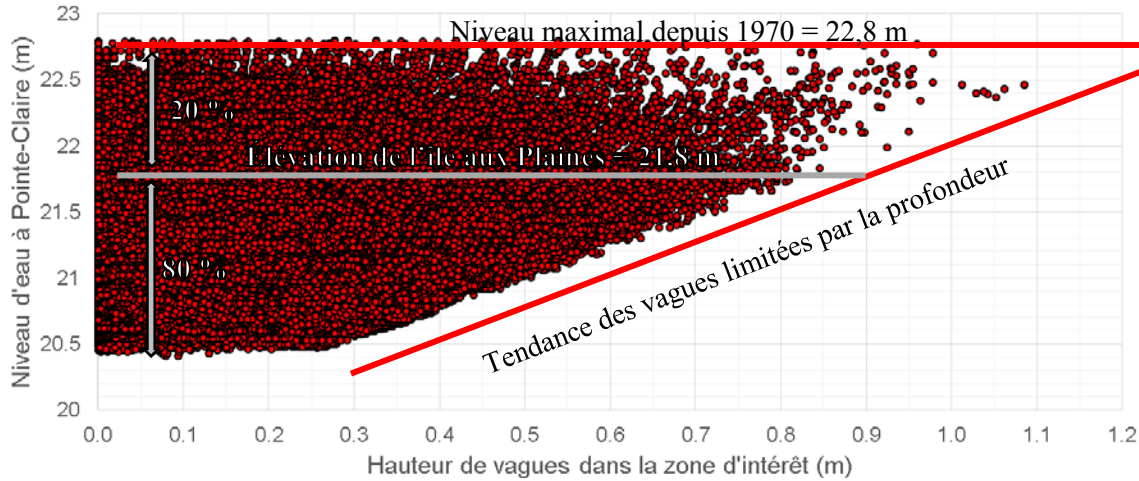


Figure 5.2 Correlation of Water Levels and Incident Wave Heights in the Zone of Interest

5.3 Returns

Adapting a law of probability to extreme incident waves in the zone under study can serve in correlating different wave heights with different return periods (Figure 5.3). By adjusting log-normal distribution, a 1 m wave height has been calculated for a 20-year return period, while a 1.1 m wave height has been calculated for a 50-year return period. This slight difference between the two return periods is primarily due to the fact that the greatest incident wave heights are limited by the depth of the site under study. It should be noted that free water conditions have been assumed for this analysis. It has accordingly been assumed that there is no ice cover and strong winter winds may generate waves reaching Île aux Plaines.

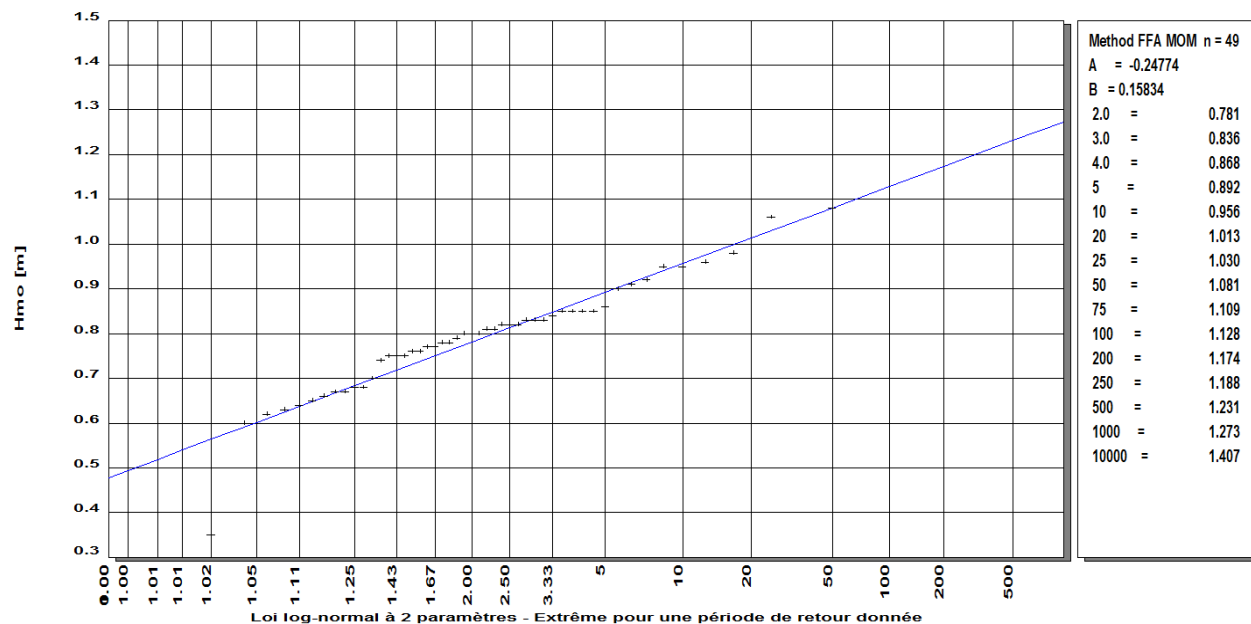


Figure 5.3 Extreme Incident Waves Obtained

6. CONCLUSION

Table 6.1 presents anticipated hydrodynamic stresses on the structure and shoreline. WSP calculated flood levels based on 1970 to 2016 data.

Table 6.1 Hydrodynamic Stresses Used for Design

| PARAMETER | DESCRIPTION | VALUES (m) | COMMENTS |
|-------------------------------------|---------------------------------|--------------------|--|
| Incident wave height at breakwaters | 2-year return | $0.8 + 0.2 = 1.00$ | Add 0.1 m to include wave reflexion and Add 0.1 m due to the ECCC's limitation of peak wind velocities at 85 km/h |
| | 20-year return | $1.0 + 0.2 = 1.20$ | |
| Height of waves at shoreline | 2-year return | 0.37 | |
| | 20-year return | 0.60 | |
| Ice thickness | Annual mean | 0.69 | |
| | 20-year return | 0.79 | |
| Water levels at Île aux Plaines | 2-year low water | 20.93 | 20.88 m at Pointe-Claire + 5 cm |
| | 2-year floor | 22.28 | 22.18 m at Pointe-Claire + 10 cm |
| | 20-year flood | 22.82 | 22.72 m at Pointe-Claire + 10 cm |
| | Daily maximum level in May 2017 | 22.60 | Estimate based on instantaneous values available: 22.50 m at Pointe-Claire + 10 cm |

Hydrodynamic conditions have been used in establishing the preliminary geometric parameters presented in Table 6.2.

Table 6.2 Provisional Geometric Parameters for Breakwater Design

| PARAMETERS | UNITS | VALUES | COMMENTS |
|-------------------------|------------|--------|--|
| d_{50} | (mm) | 800 | Ice thickness value used |
| Slopes toward lake | (X H: 1 V) | 3 | |
| Slopes toward shoreline | (X H: 1 V) | 2 | |
| Crest height | (m) | 21,8 | Same elevation as island |
| Crest width | (m) | 2,4 | To be adjusted in line with construction constraints |

7. REFERENCES

- INTERNATIONAL JOINT COMMISSION. 2014. *Plan 2014: Lake Ontario St. Lawrence River Plan 2014. Protecting against extreme water levels, restoring wetlands and preparing for climate change.* legacyfiles.ijc.org/tinymce/uploaded/LOSLR/IJC_LOSR_EN_Web.pdf
- ENVIRONMENT AND CLIMATE CHANGE CANADA. 2017. *Modélisation de l'hydrodynamique et des vagues du lac Saint-Louis (Îles de la Paix).* Technical report RT-150. 24 pages and appendices.