**PARKS CANADA**
**Quebec Navigational Waterways**
**DEMOLITION OF SOUTH-EAST AND SOUTH-WEST ESPLANADE PEDESTRIAN BRIDGES OF LACHINE CANAL**

**WORK IN 2023**

**V/REF.: CLAC-2439**

# TECHNICAL SPECIFICATIONS
# (For tender)

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PARKS CANADA

# DEMOLITION ESPLANADE PEDESTRIAN BRIDGES
# WORK IN 2023
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## GENERAL SPECIFICATIONS



## TECHNICAL SPECIFICATIONS

**Division 32: Landscaping**

# GENERAL SPECIFICATIONS

## PART 1 – GENERAL

### 1.1 Use of terms

.1 "Engineer" refers to the Parks Canada Representative or his (her) authorized representative.

.2 "Contractor" refers to the company selected to complete all work described herein, according to the standards, specifications and drawings provided for that purpose.

.3 The specifications and the "A" drawing indicated in the tender documents refer to the specifications and engineering drawings mentioned in the attached index, as well as any drawings subsequently sent, related to the same structure.

### 1.2 Interpretation

.1 Words, expressions and abbreviations with known technical or professional meaning, shall be understood in that sense in the present specifications and present drawings.

.2 The dimensions indicated or shown on the drawings, or represented by a module, lines, arrows or otherwise, shall take priority on the drawings.

.3 As well, the most recent drawings and specifications apply.

.4 When there is a discrepancy in the numerical dimensions shown on the drawings, refer to the Engineer to find out which dimensions apply.

.5 Submit any incompatibilities in the specifications and drawings in writing to the Engineer, who shall make a final decision on them and provide such in writing.

.6 The specifications and drawings are complementary, such that what is required on one is also required on the other. The structure to be built, in accordance with the drawings and specifications, shall be a complete structure in its essential parts, i.e., it shall include, most specifically, all items normally resulting from the requirements set out in the drawings and specifications, even if these items are not all specifically stipulated. The Contractor shall not profit, at the expense of Parks Canada, of any unintentional error, or omission that he may find. When the quality of work or materials is not precisely specified, the trades concerned shall provide the best possible quality.

.7 The Engineer may, for clarification purposes only, provide the Contractor with additional drawings to ensure proper execution of the works. These drawings have the same meaning and same scope as if they were included with the drawings stipulated in the contract documents.

### 1.3 Description of the works

.1 The works covered in this contract consist of:

.1 For the Esplanade Sud-Est pedestrian bridge, to carry out the deconstruction work of the existing pedestrian bridge, including the disposal of materials, the backfilling, the granular foundation and paving for the new portion of bicycle path, the installation of a new fence as well as sodding and revegetation and revegetation of the riprap slope;

.2 For the Esplanade Sud-Ouest pedestrian bridge, to carry out the deconstruction work of the existing pedestrian bridge including the disposal of materials, the construction of a retaining wall, the backfilling, granular foundation and paving for the new portion of bicycle path, the installation of new fences as well as sodding;

.3 For all pedestrian bridges, provide management and maintenance of traffic.

.2 More specifically, the works include, without however being limited to:

.1 For the Esplanade Sud-Est pedestrian bridge:

.1 Site preparation including, if required depending on the Contractor's working methods, the works to build the temporary access, trees cuts and the construction of temporary construction areas.

.2 Deconstruction and disposal of the existing pedestrian bridge and fences.

.3 Removal and disposal of the abutment’s concrete blocks.

.4 Removal of tree stumps felled.

.5 Removal and stockpiling of existing rockfill, backfilling and construction of a granular foundation with paving for the new section of bicycle path.

.6 Installation of new fence with steel posts and chain links.

.7 Reinstallation of riprap.

.8 Placement of new trees, shrubs and plants for revegetation of the slope.

.9 Placement of new sodding.

.10 Environmental protection during the works and restoration of the premises.

.2 For the Esplanade Sud-Ouest pedestrian bridge:

.1 Site preparation including, if required depending on the Contractor's working methods, the works to build the temporary access, trees cuts and the construction of temporary construction areas.

.2 Deconstruction and disposal of the existing pedestrian bridge and fences.

.3 Removal, placement on pallets and disposal of the concrete paver stones.

.4 Construction of a concrete block retaining wall including a granular foundation.

.5 Stripping of topsoil, backfilling and construction of a granular foundation with paving for the new section of bicycle path.

.6 Installation of new fences with steel posts and chain links.

.7 Installation of new sodding.

.8 Environmental protection during the works and restoration of the premises.

.3 The works covered by this contract are described in section “011100 - Summary of Works.”

**1.4 Contractor’s responsibilities**

.1 Contractor’s responsibilities:

1. Sort, transport and unload materials in locations approved by the Engineer and ensure proper handling.

2. Remove all demolition materials from the site.

3. Repair any damage caused to the existing structures to be preserved, most specifically the road and bicycle path (concrete slab and asphalt surface pavement), the land (tree, sodding, pavers, etc.), as well as any other access, facility or arrangement damaged during the execution of the works.

4. In regards to the work methods, the demolition methods and the temporary structures, where required, these shall be the sole responsibility of the Contractor, who shall hire his own experts if necessary.

5. The Contractor is responsible for finding out and adhering to the municipal regulations for the city of Montréal, as well as those of all other cities and municipalities affected by the works, which are an integral part of the documents of this contract. The Contractor shall comply with the existing municipal regulations regarding transportation and noise, and shall adapt its work shifts accordingly.

## 1.5 Work schedule

.1 The tenderer to whom the Agency awards the contract shall, within a period of five (5) working days, submit a schedule showing the various stages of work progress and the estimated completion date. The works have to be done continuously and planned to be achieved within a maximum ten (10) weeks after the contract award according the specification in section « 011150 - Progression of the works and deadlines ».

.2 Within five (5) business days following the contract award, according to the work schedule and in a form acceptable to the Engineer, deliver submission dates for shop drawings, lists of materials and samples.

.3 Revision of work progress, according to the execution schedule submitted, will be at the Engineer’s discretion. The Contractor will update the schedule with the cooperation and approval of the Engineer.

## 1.6 Site visit

.1 To become familiar with the project conditions and to obtain all of the information necessary for proper execution of the contract, the Contractor shall visit the project site prior to submitting its bid. Ignorance of the site conditions shall not constitute, in any case, a valid reason to claim a payment.

.2 The Contractor shall also study every necessary aspect of the premises to evaluate: the nature and scope of works to be performed, difficulties in accessing the work site, difficulties in performing the works, equipment and machinery that will be necessary as well as the geometry of the lanes required for transportation.

.3 If a site inspection certificate is required by the Parks Canada Agency, the date and time of the visit will be announced in the tender documents.

### 1.7 Site benchmarking

.1 The Contractor is responsible for determining all required points (X, Y, Z points, distances and elevations) for completing the works.

.2 From the control lines and levels indicated on the plans, establish key survey reference points necessary for the execution of the work and provide all required materials.

.3 Take whatever measures necessary to prevent markers from being moved during the work.

.4 Provide necessary equipment for the Engineer to perform verifications considered necessary.

.5 Approximate canal water level is as indicated on the drawings throughout the year. However, the canal is occasionally drained for maintenance purposes. The water lever may also rise after rain.

### 1.8 Permits, ordinances and regulations

.1 The Contractor will be required to obtain the permits necessary for the execution of the works. The Contractor shall comply with all provincial, municipal or federal regulations and any other law or rules relating to these works. The Contractor shall assume all responsibility for any violation of the relevant laws and regulations.

.2 The Contractor shall assume (at its own cost) all obligations relating to the safety measures required in this contract and by the various authorities concerned, as well as all obligations relating to the mitigation measures described in section “013543 – Environmental protection”.

### 1.9 Codes and standards

.1 Unless otherwise specified, perform the work in accordance with the most recent version of the Canadian Highway Bridge Design Code (CAN/CSA-S6.19), the National Building Code of Canada (NBCC) and any other federal, provincial or local codes. In cases of omission or contradiction between these standards, the most stringent requirements will apply.

.2 The work shall also meet or exceed the requirements of standards, codes and other documents referenced in the various specifications sections.

.3 Notwithstanding the reference to certain standards, codes and other documents referenced in the various sections of the specifications, the administrative clauses, the measurement and the method of payment of the work will be carried out according to the indications of the general administrative clauses of Parks Canada.

## 1.10 Archaeology

.1 The Contractor shall take into consideration that an archaeologist will be present at the site.

.2 Special Conditions

1. The Lachine Canal National Historic Site of Canada has been recognized by the Canadian government as one of the sites with the highest heritage value. Thus, on this site, all soil excavation work in areas where archaeological remains could exist shall be monitored by an archaeologist appointed by the Parks Canada Agency. Thus, the demolition of the Esplanade South-East and South-West pedestrian bridges are the subject of this section.

2. The Contractor **shall provide and update an excavation schedule** indicating the excavation days as well as details of the sectors and anticipated hours of work and transmit it to the Engineer.

.3 The Contractor shall notify the Engineer of the excavation work **at least seventy-two (72) working hours** before the intervention in order to ensure the presence of an archaeologist.

.4 Access and collaboration:

1. The Contractor shall cooperate and comply with all of the Engineer’s instructions during the excavation works, to prevent any loss of archaeological information that may exist on the site.

2. The Contractor shall facilitate access to work and collaborate with the archaeologist. The archaeologist or his representative will be based on site, as needed for the protection and registration of remains. Their role will be to guide the Contractor to prevent any loss of archaeological information and gather information on the remains.

3. The Contractor shall allow the archaeological team to conduct examinations and archaeological surveys.

.5 Archaeological discoveries:

1. The Contractor shall notify the Engineer or, in his absence, the archaeologist or representative, of any archaeological discoveries (remains of buildings or installations, objects or object fragments) at the scene and wait for their instructions before continuing the work at the discovery site. The remains, antiques and any other items with historical, archaeological or

scientific interest (remains, objects or object fragments) found on site or in areas to excavate or demolish remain the property of the Crown. **The Contractor shall protect them and obtain the Engineer's directives in this regard.**

.6 Work Stoppage:

.1 The Contractor shall provide in his contract, at his expense, work stoppage periods of twenty (20) minutes per hour of excavation in areas requiring the presence of the Archaeologist (as described in point 1.2. "1" of this section). These stoppage periods, if not used, will be accumulated and can be reused as needed later. An unused time record will be kept by the Engineer in agreement with the Contractor and the Archaeologist.

.2 For a work stoppage of more than thirty (30) minutes, the Engineer will assess the implications of this stop and notify the Contractor to this effect. The latter may be required to assign the machinery to another area to allow the work of archaeologists to continue. If the reassignment is impossible, the Contractor will be compensated from the bank of hours or, if it is exhausted, according to the agreements provided for at the first site meeting.

.7 Manual excavations for archaeological purposes:

.1 Given the possibility of archaeological discoveries, the Contractor is advised that during the work, manual excavation may be required as well as any work necessary to ensure the protection of the discoveries. The Contractor will be compensated according to the agreements provided for at the first site meeting.

.8 Protection of remains and structures:

1. The Contractor shall take all reasonable precautions during excavations and works to protect the discovered remains and allow examination by archaeologists. **Parks Canada Agency will not tolerate any derogation in this regard.** If, due to negligence, the Contractor causes damage to any remains whatsoever, it will be held responsible and the Department shall determine the impact.

2. In the unlikely event where the Engineer authorizes demolition of archaeological features on the site, the Contractor shall take the necessary precautions to protect the adjacent archaeological structures that will not be demolished. The demolition of the elements shall be carried out gradually and in a controlled manner after the archaeological surveys have been completed. If structures

are damaged during construction, notify the Engineer immediately.

**1.11 National Parks Act**

.1 The Contractor shall proceed with all work to be performed within the limits of national historic sites, national historic parks, national parks and historic canals, in accordance with the National Parks Act.

**1.12 Contractor use of premises**

.1 The Contractor's use of premises is restricted to the areas indicated in the drawings and in the specifications and the areas required for the execution of the construction works, storage, and access, to allow:

.1 Site occupancy by the Parks Canada Agency;
.2 Execution of works by other contractors;
.3 Use of the premises by the public;
.4 Use of the Lachine Canal waterway.

.2 At least five (5) working days prior to start of work at the site, the Contractor shall submit the proposed location of work site facilities, parking lots, construction material storage areas, temporary construction zones, storage areas, as well as the layout of temporary access roads as required, to the Engineer for approval.

.3 The Contractor shall restrict the use of the premises to areas identified in the drawings and specifications and determined by the Engineer for the execution of the work and storage.

.4 However, the Contractor may establish agreements with shoreline residents for its own needs or for work site needs (temporary access roads, waste areas, temporary construction areas, etc.). A signed copy of agreements between the parties shall be submitted to the Engineer before using any space outside the areas identified on the drawings and specifications.

.5 Ensure materials and equipment are not unduly accumulated, cluttering the premises.

.6 Move stored materials or equipment that hinders the work of the Engineer, another Contractor or Parks Canada operations.

.7 Work site shall not be used to shelter or provide temporary residence for Contractor's employees, throughout the duration of the works.

.8 After obtaining the required authorizations, the Contractor shall assume costs for using additional storage areas, areas to accommodate

temporary access roads, or any other additional work necessary to perform the works.

**1.13 Use of the premises by Parks Canada Agency**

.1 The Contractor shall ensure authorized Agency personnel has access to the premises for, among other things, verifying structural behaviour, operating and maintaining mechanical and electrical installations and other special elements.

**1.14 Water level in the Canal**

.1 The navigation period in the Lachine Canal is specified in the plans of this contract.

.2 A lowering of the normal level of water in the Canal will be done following the end of the navigation period as defined in the plans. Fluctuations in the water level during the winter period are to be expected.

.3 The water level will be raised to navigation level on the dates specified in the plans of this contract.

.4 The water levels of the Lachine Canal, during navigation and non-navigational periods, are presented in the plans of this contract.

.5 The Contractor shall consider fluctuations in the water level of the Canal in the development of its working methods and schedule of work. He shall, among other things, provide the equipment, the methods and the manpower necessary to complete the work within the required deadlines.

**1.15 Existing networks**

.1 The Contractor shall undertake whatever measures necessary to locate all underground equipment on the work site, regardless of whether they appear on the drawings, and shall undertake whatever provisions necessary to protect these existing facilities. The Contractor shall be responsible for any damage caused to public utility facilities, and shall assume costs for any related repairs.

.2 The Contractor is hereby informed of the presence of the following non-exhaustive list of equipment:

.1 For the Esplanade Sud-Est pedestrian bridge:

.1 Hydro-Québec, Videotron and Bell conduits on the western approach to the bridge;

.2 Videotron conduits on the east approach to the bridge;

.3 Electrical supply conduits for lampposts near the pedestrian bridge.

.2 For the Esplanade Sud-Ouest pedestrian bridge:

.1 Electrical supply conduits for lampposts near the pedestrian bridge.

.3 When connecting to existing networks, perform tasks at hours specified by authorities having jurisdiction, creating as little hindrance as possible to pedestrians, cyclists and vehicles.

.4 Before starting works, determine the location and extent of underground public utility networks and notify the Engineer of these findings.

.5 Submit the schedule for temporary interruption of existing networks or services to the Engineer for approval ten (10) working days before performing the works. Proceed with the interruptions according to the approved schedule, notifying those affected ahead of time.

.6 In the event that non-identified installations are discovered during construction, notify the Engineer immediately and send a written report on the findings.

.7 Keep a record of the location of underground public utility networks that are either in service, diverted, or abandoned.

.8 Repair any network failure caused by the present works.

**1.16 Connection, adjustment and drilling**

.1 Perform necessary demolition and concrete work with precision, ensuring that structures to be connected or linked to others are done so according to the dimensions shown on the drawings.

.2 When a new structure is connected to one already in place but has been modified, remediate as necessary to adapt it to the structure already in place.

.3 It is strictly forbidden to drill a supporting element.

**1.17 Site meetings**

.1 The Contractor is required to attend site meetings.

.2 The Engineer will be responsible for organizing the meetings, setting the times and preparing and distributing the meeting minutes.

.3 Site meetings will take place every two weeks.

**1.18 Documents required on site**

.1 Keep a copy of each of the following documents on the work site:

1. Drawings, specifications and contractual addenda;
2. Notes, drawings and complementary plans;
3. Approved shop drawings;
4. Change authorisations;
5. Reports for tests performed on the structure and materials;
6. Approved work execution schedule;
7. Manufacturer's installation and operating instructions;
8. Environmental Protection Plan as well as Project Mitigation Measures Table.

## 1.19 Site restoration

.1 Restore all existing surfaces, peat, lots, landscaping, structures and services damaged during the construction works of the present contract, in order to achieve site conditions that are equal or superior to the original conditions.

**END OF SECTION**

## PART 1 – GENERAL

### 1.1 Section content

.1 Works covered by the contract documents.

.2 Work sequence.

### 1.2 Related sections

.1 Section 010050 – General instructions

.2 Section 011150 – Progression of the works and deadlines

.3 Tender form

### 1.3 Works covered by the contract documents

.1 Single contract: The works covered in this contract relates to the demolition of the Esplanade Sud-Est and Esplanade Sud-Ouest pedestrian bridges, crossing the National Historic Site of the Lachine Canal in Montreal.

.2 With regard to the demolition of the Esplanade Sud-Est pedestrian bridge, the main works covered by this contract consist of, but are not limited to, the following works:

.1 Mobilization on the pedestrian bridge site to carry out the work.

.2 Installation of temporary signage to maintain pedestrian and bicycle traffic during works.

.3 Site preparation including, when required, depending on the Contractor's working methods, the construction of temporary access roads.

.4 Trees cuts and disposal.

.5 Deconstruction and disposal of the pedestrian bridge including the steel structure, wooden decking and fences.

.6 Removal and stockpiling of existing riprap.

.7 Removal of tree stumps felled.

.8 Backfilling of MG-112 stones granular material and construction of a granular MG-20 foundation with paving and marking for the new section of bicycle path.

.9 Installation of a fence with steel posts and chain links.

.10 Reposition the riprap at the bottom of the slope.

.11 Planting of new trees, shrubs and plants for revegetation of the slope.

.12 Installation of new sodding.

.13 Restoration of the premises;

.14 Removal of temporary signage for pedestrian bridge work;

.15 Demobilization of the pedestrian bridge site;

.16 Compliance with environmental requirements during the work;

.17 All related work required to complete the work according to contractual documents.

.3 With regard to the demolition of the Esplanade Sud-Ouest pedestrian bridge, the main works covered by this contract consist of, but are not limited to, the following works:

.1 Mobilization on the pedestrian bridge site to carry out the work;

.2 Installation of temporary signage to maintain pedestrian and bicycle traffic during works;

.3 Site preparation including, when required, depending on the Contractor's working methods, the construction of temporary access roads;

.4 Trees cuts and disposal;

.5 Deconstruction and disposal of the pedestrian bridge including the steel structure, wooden decking and fences.

.6 Removal, placement on pallets and disposal of the concrete paver stones.

.7 Construction of a concrete block retaining wall including a granular foundation.

.8 Stripping of topsoil.

.9 Backfilling of MG-112 stones granular material and construction of a granular MG-20 foundation with paving and marking for the new section of bicycle path.

.10 Installation of a fence with steel posts and chain links.

.11 Installation of new sodding.

.12 Restoration of the premises;

.13 Removal of temporary signage for pedestrian bridge work;

.14 Demobilization of the pedestrian bridge site;

.15 Compliance with environmental requirements during the work;

.16 All related work required to complete the work according to contractual documents.

.4 It should be noted that these works will require full closure of the Esplanade Sud-Est and Esplanade Sud-Ouest pedestrian bridges throughout the period defined in Section 011150 – Progression of the works and deadlines.

**1.4 Work sequence**

.1 Perform work according to the phases set out in Section 011150 – Progression of the works and deadlines.

.2 Coordinate work schedules and Parks Canada Agency site occupancy during construction.

**END OF SECTION**

## PART 1 – GENERAL

### 1.1 Section Content

.1 Progression of the works

.2 Deadlines

### 1.2 Related sections

.1 Section 011100 – Summary of work

.2 Tender form

### 1.3 Progression of the works

.1 The Contractor shall establish the work progress and sequence in accordance with the requirements set out in the present document. The Contractor shall oversee sequencing, as well as structure and service continuation.

.2 Before the start of work on each pedestrian bridge, the installation of the temporary signage to maintain pedestrian and bicycle traffic during the work shall be carried out.

.3 Principal steps to plan for the Esplanade Sud-Est pedestrian bridge:

- Validation of the location of public utilities on the western approach to the pedestrian bridge;
- Trees cuts identified with the Engineer;
- Removal and deconstruction of the pedestrian bridge including the steel structure, wooden decking and fences;
- Excavation and removal of concrete blocks from abutments;
- Removal of tree stumps felled;
- Disposal of deconstruction materials;
- Removal and stockpiling of 0-300 mm riprap in the fill area;
- Preparation of the bottom of the slope for the revegetation requirements of the slope;
- Backfill by layer MG-112 stone granular material, construction of a granular MG-20 foundation for the new section of the bicycle path;

- Placement of 0-300 mm caliber riprap including clay topsoil and trees, shrubs and plants required for revegetation of the slope;
- Preparation and concreting of the bases of steel fence posts;
- Placement of new sodding;
- Placement of paving including marking for the new section of the bicycle path;
- Installation of the fence with steel posts and chain links;
- Site restoration.

.4 Principal steps to plan for the Esplanade Sud-Ouest pedestrian bridge:

- Validation of the location of the electrical supply conduits of the street lamps;
- Trees cuts identified with the Engineer;
- Removal and deconstruction of the pedestrian bridge including the steel structure, wooden decking and fences;
- Removal, placement on pallets and disposal of the paver stones;
- Disposal of deconstruction materials;
- Stripping of topsoil;
- Construction of a retaining wall made of concrete blocks with a granular foundation.
- Backfill by layer of MG-112 stones granular material, construction of a granular MG-20 foundation for the new section of the bicycle path;
- Preparation and concreting of the bases of steel fence posts;
- Placement of new sodding;
- Installation of paving including marking for the new section of the bicycle path;
- Installation of the fence with steel posts and chain links;
- Site restoration.

.5 The Contractor shall adjust work progress and sequence in accordance with the requirements set out in the present document, as well as its work methods.

.6 When developing its work schedule, the Contractor shall take into account the lead time required for obtaining the various permits, certificates and materials necessary to perform the works.

## 1.4 Deadlines

.1 Contractual deadline:

- The works covered by the present contract shall be completely finished, i.e. acceptance of work shall have been issued, no later than ten (10) weeks after contract award;
- The works of backfilling of MG-112 stones granular material at Esplanade Sud-Est pedestrian bridge shall be completely finished no later than four (4) weeks after contract award
- The paving works shall be completely finished no later than one (1) week after the thaw period precribed by MTQ, as indicated in section « 321200 – Asphalt pavement ».
- On that date of paving works, all works shall have been completed, all traffic lanes (pedestrian, bicycle paths and roadways) fully opened.

.2 The number of days elapsed between actual completion of works and acceptance of work is not included in the various deadlines.

.3 The Contractor shall implement whatever measures and provisions necessary, both in terms of human resources and material resources, to perform the works in accordance with the prescribed deadlines.

.4 In order to comply with the aforementioned deadlines, the Contractor's work schedule shall include working during the day, at night, on weekends and holidays, and this, at no additional cost. In order to comply with these deadlines, the Contractor shall at least meet the following conditions:

- Construction teams working simultaneously on the Esplanade Sud-Est and Sud-Ouest pedestrian bridges;
- Two (2) work shifts per day between 7am to 7pm, six (6) days per week, if required.

**END OF SECTION**

## PART 1 – GENERAL

### 1.1 Measurement for payment

.1 The Contractor is responsible for breaking down its tender price in accordance with the tender form.

.2 Each price tendered shall include the work, all direct and indirect costs, all expenses, all materials, transport, labour, equipment, accessories and the implementation necessary to perform the work according to the drawings and specifications, and as directed by the Engineer. Furthermore, prices tendered shall include, without being limited to, the following:

- .1 Coordination of the work, any necessary adjustments and corrections required on-site, execution of engineering and technical work required to ensure work is performed in accordance with good practices and provisions set out in the specifications;
- .2 All responsibilities, obligations, acts, facts, omissions or errors attributable to the Contractor within the framework of performing the work of this contract.

.3 The prices tendered shall also include all fees associated with the company's general and administrative fees such as insurance, contributions, interest, rent, taxes and other incidental expenses. They shall cover losses and damages resulting from the nature of the work, the fluctuation of prices and wages, business risks, strikes, accidents, acts of nature and any other fortuitous events.

.4 All quantities leading to a payment shall be established based on measured readings taken jointly with the Engineer. It is the Contractor's responsibility to order these readings in due course, and within a reasonable time frame. The quantities calculated for payment shall be established in accordance with the schedule defined in the present section.

.5 All costs incurred relating to specification requirements that are not listed under a specific item on the tender form shall be included in the price for the item entitled, "Mobilization/Demobilization."

.6 Majority of the work will be carried out in winter conditions and during the thaw period.

.7 This section presents a detailed description of each payment item on the tender form.

## ITEM 1 – WORKSITE ORGANIZATION

### Item 1.1 – Mobilization/Demobilization

Mobilization and demobilization are payable on the basis of a lump sum.
The price tendered for this item shall include, without being limited to:

.1 A site trailer including a meeting room for two (2) PCA representatives, two (2) WSP employees, one (1) employee responsible for laboratory tests and other as required for the Contractor;

.2 Procurement of all the required permits and authorizations, as well as insurance and surety bonds;

.3 Provision of all contractual and professional documents required in the contract including, without being limited to, the detailed schedule and updates, statutory declarations, signed and sealed drawings, different procedures, certificates of compliance and attestations not specifically included in other pay items, as well as forms and manifests relating to disposal of hazardous residual materials or special waste;

.4 Laboratories fees the Contractor is responsible for paying;

.5 Project manager and superintendent services;

.6 Compliance with all safety measures;

.7 Cost of all requirements relating to preserving archaeological remains;

.8 Location and protection, where required, of all utilities and other facilities owned by Parks Canada or others, located in the work area;

.9 All bench mark surveys, other than those specifically remunerated in the Paid Items Table, site implementation work required to perform the works and provision of topographic surveys in electronic file format for approval by the Engineer;

.10 Supply and installation of falsework for which costs are not specifically included in other payment items, to enable construction and inspection of structures during construction;

.11 Construction of access platforms, work platforms, scaffolding or any other access structure required to perform work and for which costs are not specifically included in other payment items;

.12 Construction of the temporary access road and temporary construction zone, as required to perform work;

.13 All components necessary for the execution of the work, according to drawings and specifications, regardless of whether or not the components are stipulated in the specifications or illustrated on the drawings;

.14 The storage of machinery, materials, equipment, accessories and tools appropriate for the job site location;

.15 Transport of materials on and off site, for which costs are not specifically included in other payment items;

.16 All temporary services and connections, such as water, electricity and sanitary facilities for the Contractor's needs;

.17 Provision of portable chemical toilets, including handling and transport to and from the site, as well as the maintenance required for the duration of their use;

.18 Supply of fencing and other security measures necessary to protect the machinery, labourers, materials, equipment, accessories, tools, pedestrian bridge, public utilities, scaffolding and access devices;

.19 Provision of all necessary fences to delineate the work zones, temporary access road areas, storage areas, areas above buried public utility lines to be protected, and any other area requiring such on the work site, including those illustrated in Appendix 1 of section "015526 - Traffic regulation";

.20 Construction site and work area maintenance, cleanliness, cleaning and restoration;

.21 Inspection of each work phase;

.22 Removal and disposal, not specifically included in the other pay items, of waste materials such as refuse, debris and chunks of demolished concrete from the site and disposal in a designated place intended for that purpose and in accordance with the specifications, for the entire contract term;

.23 Performing all other work mentioned in these specifications and shown on the plans, which is not included in any other payment item on the tender form;

.24 Site restoration at the end of the work. All grass surface damaged during works have to be replaced in spring;

.25 Supply of all required end-of-contract documentation including, without being limited to, final statutory declarations, "as-built" drawings and all other documents required by Parks Canada to complete the Contract, which are not specifically included in any other payment item;

The price tendered for work stipulated in the present item is payable according to the following terms and conditions:

.1 An initial amount corresponding to 30% of the tendered amount for the present item is payable when the general mobilization is complete.

.2 The balance of the tendered amount for the present item shall be payable when the general demobilization is complete.

**Item 1.2 – Environmental protection including trees and shrubs**

Environmental protection is payable on the basis of a lump sum.

The price tendered for this item shall include, without being limited to, all environmental protection measures, including those related to the protection of

trees and shrubs, water management and erosion control measures stipulated in the drawings and specifications, including supply of materials, transport, implementation, operation, maintenance throughout the duration of the work, dismantling and disposal. The price shall also include the design, preparation of the drawings including the environmental protection plan, all drawings and documents to supply, cofferdams if the Contractor's methods require them, as well as excavation dewatering devices.

The price tendered for work stipulated in the present item is payable according to the following terms and conditions:

.1 An initial amount corresponding to 30% of the tendered amount for the present item is payable when the general mobilization is complete.

.2 The balance of the tendered amount for the present item shall be payable when the general demobilization is complete.

### Item 1.3 – Trees cut and disposal

The trees cut and disposal is payable per unit of trees cut, according to the Engineer's instructions.

The price tendered for this item shall include, but is not limited to, materials and equipment, the implementation and disposal of debris from stump removal, and it includes any incidental expenses.

### Item 1.4 – Removal and disposal of small signage

The removal and disposal of the small signage is payable on a lump sum basis. The small signage is planted in the ground on posts.

The price tendered for this item shall include, but not be limited to, all procedures, methods, materials, resources, equipment and all other activities necessary for the execution of the work covered by this item, as well as any incidental expense.

## ITEM 2 – DISMANTLING OF ESPLANADE SUD-EST PEDESTRIAN BRIDGE

### Item 2.1 – Dismantling and disposal of the fences

The dismantling and disposal of the fences is payable on the basis of a lump sum.

The price tendered for this item shall include, but not be limited to, the supply of equipment and materials, implementation and any incidental expenses. The price also includes the disposal of materials and the removal of concrete bases, if required.

**Item 2.2 – Dismantling and disposal of the pedestrian bridge including the steel structures and wooden decking**

The dismantling and disposal of the pedestrian bridge, including the steel structure and wooden decking, is payable on the basis of a lump sum.

The price tendered for this item shall include, but is not limited to, the supply of equipment, the implementation and disposal of demolition materials, and includes any incidental expenses. All costs related to lifting and moving the bridge on approaches including, but not limited to, all procedures and methods, resources, lifting and transport equipment shall also be included in the price tendered for this item.

**Item 2.3 – Dismantling and disposal of the abutment concrete blocks**

The dismantling and disposal of the abutment concrete blocks is payable on the basis of a lump sum.

The price tendered for this item shall include, but is not limited to, the supply of equipment, the implementation and disposal of demolition materials, and includes any incidental expenses. All the costs relating to the lifting and moving of the concrete blocks on the approaches as well as the excavation necessary to allow the removal of the concrete blocks shall also be included in the price tendered for this item.

**Item 2.4 –Removal of stumps from felled trees**

The removal of stumps of felled trees is payable by the unit of stumps removed, according to the prescriptions of the plans and specifications as well as the instructions of the Engineer.

The price tendered for this item shall include, but is not limited to, materials and equipment, the implementation and disposal of debris from stump removal, and it includes any incidental expenses.

**Item 2.5 – Removal and stockpiling of 0-300 mm riprap**

The removal and stockpiling of 0-300 mm riprap is payable on the basis of a lump sum.

The price tendered for this item shall include, but not be limited to, the supply of equipment, the implementation and disposal of materials, transportation and includes any incidental expenses. The price also includes removal of vegetation, debris and topsoil, if required.

## ITEM 3 – DISMANTLING OF ESPLANADE SUD-OUEST PEDESTRIAN BRIDGE

### Item 3.1 – Dismantling and disposal of the fences

The dismantling and disposal of the fences is payable on the basis of a lump sum.

The price tendered for this item shall include, but not be limited to, the supply of equipment and materials, implementation and any incidental expenses. The price also includes the disposal of materials and the removal of concrete bases, if required.

### Item 3.2 – Dismantling and disposal of the steel plates at the approaches

The removal and disposal of the steel plates at the approaches is payable on the basis of a lump sum.

The price tendered for this item shall include, but not be limited to, all procedures and methods, resources, lifting and transport equipment, and all other activities necessary for the performance of the work covered by this item as well as any incidental expenses.

### Item 3.3 – Dismantling and disposal of the pedestrian bridge including the steel structures and wooden decking

The dismantling and disposal of the pedestrian bridge, including the steel structure and wooden decking, is payable on the basis of a lump sum.

The price tendered for this item shall include, but is not limited to, the supply of equipment, the implementation and disposal of demolition materials, and includes any incidental expenses. All costs related to lifting and moving the bridge on approaches including, but not limited to, all procedures and methods, resources, lifting and transport equipment shall also be included in the price tendered for this item.

### Item 3.4 –Removal, placement on pallets and disposal of the concrete paver stones

The removal, placement on pallets and disposal of the concrete paver stones is payable on the basis of a lump sum.

The price tendered for this item shall include, but not be limited to, all procedures and methods, resources and transport equipment, and all other activities necessary for the performance of the work covered by this item as well as any incidental expenses.

## ITEM 4 – BACKFILLAND BICYCLE PATH OF THE ESPLANADE SUD-EST PEDESTRIAN BRIDGE

### Item 4.1 – Backfill with MG-112 stone granular material

The MG-112 stone granular material backfill of approaches is payable per cubic meter of material put in place according to the prescriptions of the plans and specifications as well as the Engineer's instructions.

The backfill covered by this item includes any backfill up to the level of the MG-20 granular foundation layer of the bicycle path or landscaping. The backfill shall be carried out in accordance with the theoretical sections illustrated on the plans.

The price tendered for this item shall include, but not be limited to, the provision of required documents, storage, maintenance of excavation slopes, backfilling, compaction, cleaning, and includes any incidental expenses. The price also includes the equipment and labor for carrying out this work, the temporary means of erosion control and sediment deposition, the supply and installation of layers of MG-112 stone granular material and geotextile as indicated on the plans.

The price submitted shall also include the costs of surveying necessary to monitor the work up to the final level of excavation.

**Item 4.2 – Granular foundation, prepared hot-mixed asphalt and marking**

The granular foundation, prepared hot-mixed asphalt and marking for the bicycle path are payable per square meter of granular foundation and asphalt implemented, according to drawings and specifications and the Engineer's instructions.

The granular foundation of the bicycle path shall be implemented according to the level of compaction indicated on the plans. It shall be made of MG-20 granular material that meets the requirements of MTQ Volume VII, Norme 2101 - *Ouvrages Routiers* standard and NQ 2560-114 after compaction.

The tendered price for this item shall include, but is not limited to, the supply of required documents including the asphalt mixture description sheets, supply of equipment and material, preparation of the bottom of excavations, impregnation binder, adhesion bitumen for transverse joints, compaction, placement, finishing, implementation, and any incidental expenses. The price also includes the implementation of the construction joints, the saw cuts and the final marking of the bicycle path.

**Item 4.3 – Sod plates held by its own weight (including topsoil)**

The sod plates held in place by their own weight are payable per square metre of sod areas. The areas that are the subject of this work are those identified on the plans as well as those identified by the Engineer.

Sodding includes the supply and installation of topsoil.

Sodding in excess of those planned, for which the Contractor is responsible for the sodding damaged areas, will not be taken into account, for payment, by the Engineer.

The tendered price for this item shall include, but is not limited to, the supply of required documents and samples, stripping of existing topsoil, temporary means for erosion and sediment control, preparation of existing subgrade soil, supply, placement and spreading of topsoil, finish levelling, supply and installation of sod plates, protective barriers, maintenance during the establishment period, maintenance during the warranty period including fertilizers, supply of equipment and materials, implementation and any incidental expenses. The price also includes the transportation, storage and handling required to carry out this work as well as labour such as supervisors and landscaping contractor.

**Item 4.4 – Installation of the fences with steel posts and chain links (including the concrete bases for the posts and anchor plates)**

The installation of fences with steel posts and chain links (including the concrete bases for the posts and anchor plates) is payable by the linear meter of fences supplied and installed according to the prescriptions of the plans and specifications as well as the Engineer's instructions.

The price tendered for this item shall include, but not be limited to, the provision of required documents and samples, excavations and backfill of excavations, placement of steel posts, concreting of post bases, supply and installation of the anchor plates, supply and installation of all of the specified fence components and includes any incidental expenses.

The price tendered shall also include the equipment, supply and installation of anchors and chemical anchor product, drilling of holes as well as installation.

Any damage to the fencing caused by the work shall be repaired or replaced by the Contractor at his expense.

**Item 4.5 – Implementation of 0-300 mm riprap**

The implementation of riprap in embankments with 0-300 mm caliber stones is payable per square meter of riprap surfaces as specified in the plans and specifications and according to the depth indicated on the plans.

The work consists of removing vegetation and debris on the slope, excavating to remove topsoil and leveling the slope, correcting the embankments with granular material and installing a riprap to protect the bottom of the slope. of the canal.

For the part of the slope identified on the plans, a riprap of the slope in 0-300mm stones, 50%> 150mm, with type V geotextile shall be put in place.

The price tendered for this item shall include, but not be limited to, the supply of the required documents, excavations, backfill required for the placement of riprap, preparation of the surface to be covered including the foundation at the base when required, the supply of equipment and materials including the geotextile membrane, implementation and any incidental expenses. The price also includes removal of vegetation, debris and topsoil, when required.

**Item 4.6 – Planting deciduous shrubs and young plants in pots**

The planting of deciduous shrubs and young plants in pots is payable on the basis of a lump sum, according to the prescriptions of the plans and specifications.

Deciduous shrubs and young potted plants include the listed species, and this, at a size of 9 gallons each:

- Red-osier dogwood (*Cornus stolonifera*);
- Eastern ninebark (*Physocarpus oplulifolius*);
- Broad-leaved meadowsweet and Steeplebush (*Spirea albae var. latifolia and Spiraea tomentosa)*

Plantations in excess of those planned, for which the Contractor is responsible for revegetating damaged areas, will not be taken into account, for payment, by the Engineer.

The price tendered for this item shall include, but not be limited to, transportation, supply, skilled labor, pre-plant maintenance, handling, materials and equipment required for planting, equipment and any incidental expenses for a complete planting.

The price also includes maintenance work during the entire establishment and warranty period. The maintenance work described in section "032910 - Planting trees, shrubs and plant cover crops" is a minimum requirement. This does not absolve the Contractor from carrying out all the actions it deems necessary in order to ensure the survival of the plants and to respect its guarantee. Keeping accessories in good condition and inspections to detect insects and diseases and any incidental expenses.

The price tendered for the work provided for in this item is payable in the following ways:

.1 A first amount, corresponding to 80% of the amount tendered for this item, is payable when the leafy shrubs and young potted plants are planted to the satisfaction of the Engineer;

.2 The balance of the amount tendered for this item is payable at the end of the first year of warranty.

**Item 4.7 – Planting small trees**

The planting of small trees is payable by the unit of the planted trees, according to the prescriptions of the plans and specifications.

The small-leaved tree species is the Canada serviceberry (*Amelanchier canadensis*).

Plantations in excess of those planned, for which the Contractor is responsible for revegetating damaged areas, will not be taken into account, for payment, by the Engineer.

The price tendered for this item shall include, but not be limited to, transportation, supply, skilled labor, pre-plant maintenance, handling, materials

and equipment required for planting, equipment and any incidental expenses for a complete planting. The price also includes the supply and installation of stakes, harnesses, tensioners, guy wires, cable ties and anchor stakes, when required.

The stake shall be a 40 mm x 40 mm x 5 mm x 2440 mm T-shaped steel profile, galvanized and painted green.

The price also includes maintenance work during the entire establishment and warranty period. The maintenance work described in section "032910 - Planting trees, shrubs and plant cover crops" is a minimum requirement. This does not absolve the Contractor from carrying out all the actions it deems necessary in order to ensure the survival of the plants and to respect its guarantee. Keeping accessories in good condition and inspections to detect insects and diseases and any incidental expenses.

The price tendered for the work provided for in this item is payable in the following ways:

.1 A first amount, corresponding to 80% of the amount tendered for this item, is payable when the small trees are planted to the satisfaction of the Engineer;

.2 The balance of the amount tendered for this item is payable at the end of the first year of warranty.

**Item 4.8 – Planting aquatic plants**

Planting of aquatic plants is payable on a lump sum basis, according to the prescriptions of the plans and specifications.

Aquatic plants include the following listed species:

- Harlequin blue flag (*Iris versicolor*) at a size of 10 liters each.
- Broad-leaved cattails (*Typha latifolia*) at a size of 11 liters each.
- Soft-stemmed bulrush (*Schoenoplectus tabernaemontani*) at a size of 5 liters each.

Plantations in excess of those planned, for which the Contractor is responsible for revegetating damaged areas, will not be taken into account, for payment, by the Engineer.

The price quoted for this item shall include, but not be limited to, transportation, supply, skilled labor, pre-plant maintenance, handling, materials and equipment required for planting, equipment and any incidental expenses for a complete planting.

The price tendered for the work provided for in this item is payable in the following ways:

.3 A first amount, corresponding to 80% of the amount tendered for this item, is payable when the aquatic plants are planted to the satisfaction of the Engineer;

.4 The balance of the amount tendered for this item is payable at the end of the first year of warranty.

### Item 4.9 – Topsoil including Coconut mat

Topsoil including coconut mat is payable on a lump sum basis, according to the prescriptions of the plans and specifications. This payment item includes topsoil, clay topsoil and the coconut mat necessary for planting.

The price tendered for this item shall include, but not be limited to, the provision of required documents and samples, temporary means for erosion and sediment control, preparation of existing bedding soil, provision, placement and spreading of topsoil, clay topsoil and coconut mat, leveling of finish and any incidental expenses. The price also includes the transportation, storage and handling required to carry out this work as well as skilled labor.

### Item 4.10 – Hydroseeding

Hydro-seeding is payable per square meter of seeded areas. The surfaces that are the subject of this item are those identified on the plans as well as those identified by the Engineer.

Hydro-seeding includes the supply and placement of the seeding mixture and seeds.

The price tendered for this item shall include, but not be limited to, the provision of required documents and samples, temporary means for erosion and sediment control, preparation of existing bedding soil, provision, supply and implementation of hydro-seeding, maintenance during the establishment period, maintenance during the warranty period including fertilizers, supply of equipment and materials, implementation and any incidental expenses. The price also includes the transportation, storage and handling required to carry out this work as well as skilled labor.

### Item 4.11 – Transport and disposal – “B-C” contaminated soils

Transportation and disposal of “B-C” contaminated soils shall be paid per ton of contaminated soil, according to drawings and specifications and the Engineer’s instructions.

The Contractor shall provide for the separation of dry materials in the soil prior to the disposal of contaminated soils in accordance with the requirements of Section 013513-43. These materials shall be disposed of at a site approved by the MELCC. To do so, the Contractor shall provide a letter of agreement signed jointly by the Contractor and the site owner confirming his authorization to receive the soil from this project.

The tendered price for this item shall include, but is not limited to, the supply of the letter of agreement for the disposal site and any required documents, excavation, stockpiling, installation of impermeable membranes and tarpaulins, mechanical sorting if required, loading, transportation and disposal of excavated soil with an "B-C" contamination level, labour and equipment, and includes any incidental expenses.

Transport and disposal of “B-C” contaminated soils shall be paid per cubic metre of contaminated soil transported and disposed.

Price tendered for this item shall include, without being limited to, removing, transporting and disposal of the contaminated soil, the implementation, equipment and any incidental expenses.

## ITEM 5 – BACKFILLING AND CYCLING PATH OF ESPLANADE SUD-OUEST PEDESTRIAN BRIDGE

### Item 5.1 – Topsoil stripping

The removal of topsoil units is payable per cubic meter of excavated topsoil, according to the indications in the plans and specifications.

The price tendered for this item shall include, but not be limited to, stripping of existing topsoil, temporary means for erosion and sediment control, preparation of existing bedding soil, supply equipment and materials, implementation and any incidental expenses.

### Item 5.2 – Installation of a concrete block retaining wall including its granular foundation

The supply, transportation and installation of the concrete block retaining wall are payable per square meter of retaining wall surface, according to the indications of the plans and specifications.

The price tendered for this item shall include, but not be limited to, the provision of the required documents including technical data sheet, the supply of description sheets of the mixture, the equipment, the supply of materials, prefabrication, finishing, ripening of concrete, storage, transportation, installation of the concrete block wall on site and implementation, and it includes any incidental expenses. The price also includes the lifting equipment necessary for carrying out the work and implementing the concrete block retaining wall.

The price also includes granular material foundation and the backfill according to the level of compaction indicated on the plans as well as the supply of equipment and materials, implementation and any incidental expense.

### Item 5.3 – Backfill with MG-112 stone granular material

The MG-112 stone granular material backfill of approaches is payable per cubic meter of material put in place according to the prescriptions of the plans and specifications as well as the Engineer's instructions.

The backfill covered by this item includes any backfill up to the level of the MG-20 granular foundation layer of the bicycle path or landscaping. The backfill shall be carried out in accordance with the theoretical sections illustrated on the plans.

The price tendered for this item shall include, but not be limited to, the provision of required documents, storage, maintenance of excavation slopes, backfilling,

compaction, cleaning, and includes any incidental expenses. The price also includes the equipment and labor for carrying out this work, the temporary means of erosion control and sediment deposition, the supply and installation of layers of MG-112 stone granular material and geotextile as indicated on the plans.

The price submitted shall also include the costs of surveying necessary to monitor the work up to the final level of excavation.

**Item 5.4 – Granular foundation, prepared hot-mixed asphalt and marking**

The granular foundation prepared hot-mixed asphalt and marking for the bicycle path are payable per square meter of granular foundation and asphalt implemented, according to drawings and specifications and the Engineer's instructions.

The granular foundation of the bicycle path shall be laid according to the level of compaction indicated on the plans. It shall be made of MG-20 granular material that meets the requirements of MTQ Volume VII, Norme 2101 - *Ouvrages Routiers* standard and NQ 2560-114 after compaction.

The price tendered for this item shall include, but is not limited to, the supply of required documents including mixture description sheets, supply of equipment and material, preparation of the bottom of excavations, impregnation binder, adhesion bitumen for transverse joints, compaction, placement, finishing, installation, implementation, and any incidental expenses. The price also includes the construction joints, saw cuts and the final marking of the bicycle path.

**Item 5.5 – Sod plates held by its own weight (including topsoil)**

The sod plates held in place by their own weight are payable per square metre of sod areas. The areas that are the subject of this work are those identified on the plans as well as those identified by the Engineer.

Sodding includes the supply and installation of topsoil.

Sodding in excess of those planned, for which the Contractor is responsible for the sodding damaged areas, will not be taken into account, for payment, by the Engineer.

The tendered price for this item shall include, but is not limited to, the supply of required documents and samples, stripping of existing topsoil, temporary means for erosion and sediment control, preparation of existing subgrade soil, supply, placement and spreading of topsoil, finish levelling, supply and installation of sod plates, protective barriers, maintenance during the establishment period, maintenance during the warranty period including fertilizers, supply of equipment and materials, implementation and any incidental expenses. The price also includes the transportation, storage and handling required to carry

out this work as well as labour such as supervisors and landscaping contractor.

**Item 5.6 – Installation of the fences with steel posts and chain links (including the concrete bases for the posts and anchor plates)**

The installation of fences with steel posts and chain links (including the concrete bases for the posts and anchor plates) is payable by the linear meter of fences supplied and installed according to the prescriptions of the plans and specifications as well as the Engineer's instructions.

The price tendered for this item shall include, but not be limited to, the provision of required documents and samples, excavations and backfill of excavations, placement of steel posts, concreting of post bases, supply and installation of the anchor plates, supply and installation of all of the specified fence components and includes any incidental expenses.

The price tendered shall also include the equipment, supply and installation of anchors and chemical anchor product, drilling of holes as well as installation.

Any damage to the fencing caused by the work shall be repaired or replaced by the Contractor at his expense.

**Item 5.7 – Transport and disposal – "B-C" contaminated soils**

Transportation and disposal of "B-C" contaminated soils shall be paid per ton of contaminated soil, according to drawings and specifications and the Engineer's instructions.

The Contractor shall provide for the separation of dry materials in the soil prior to the disposal of contaminated soils in accordance with the requirements of Section 013513-43. These materials shall be placed in a site approved by the MELCC. To do so, the Contractor shall provide a letter of agreement signed jointly by the Contractor and the site owner confirming his authorization to receive the soil from this project.

The tendered price for this item shall include, but is not limited to, the supply of the letter of agreement for the disposal site and any required documents, excavation, stockpiling, installation of impermeable membranes and tarpaulins, mechanical sorting if required, loading, transportation and disposal of excavated soil with an "B-C" contamination level, labour and equipment, and includes any incidental expenses.

## ITEM 6 – MANAGEMENT AND MAINTENANCE OF TRAFFIC

### Item 6.1 – Mobilization and demobilization of the temporary signage

Work pertaining to the mobilization and demobilization of the temporary signage is payable on the basis of a lump sum.

The price tendered for this item shall include, without being limited to:

.1 Supply, mobilization and demobilization of the temporary signage;

.2 Preparation of all traffic signage plans;

.3 Provision of all labor assigned to installation and demobilization of signage, as well as the machinery and vehicles necessary for temporary signage;

.4 Mobilization of the work zone accesses and dismantling at the end of construction works;

.5 Provision of flagmen as needed for controlling site access;

.6 Supply, mobilization and demobilization of free-standing fencing necessary for execution of works on the entire work site, in accordance with the requirements set out in the present document;

.7 Survey of existing vertical signage to cover during work and uncover upon completion of works;

.9 Temporary signage, equipment and labour necessary for full completion of all works;

.10 All other costs associated with specific requirements pertaining to the maintenance of traffic and temporary signage, as defined in Articles 4.1, “Temporary traffic signage plans” through 4.9 "Personnel and equipment assigned to signaling" in section 015526 and to Article 1.2 “Freestanding fence” in section 015600 of this document.

The price tendered for the work provided for in this item is payable in the following ways:

.1 A first amount, corresponding to 50% of the amount tendered for this item, is payable when the global mobilization is completed;

.2 The balance of the amount tendered for this item is payable when the global demobilization is entirely finished.

### Item 6.2 – Maintenance of traffic and temporary signage

Work pertaining to the maintenance of traffic and temporary signage are payable at a daily rate.

The price tendered for this item shall include, without being limited to:

.1 Maintenance, upkeep, replacement in the event of breakage or vandalism, covering/uncovering and re-locating temporary traffic signage for the

traffic management of all type of transportation (including pedestrians and cyclists);

.2 Provision of all labor assigned for maintenance and upkeep of signage, as well as the machinery and vehicles necessary for temporary signage;

.4 Maintenance and upkeep of accesses to work zone;

.5 Provision of flagmen as needed for controlling site access;

.6 Maintenance, upkeep, replacement in the event of breakage or vandalism, covering/uncovering and re-locating temporary traffic signage and free-standing fencing necessary for execution of works on the entire work site, in accordance with the requirements set out in the present document;

.7 Upkeep of roadway signage, including performing the required inspections;

.8 Temporary signage, equipment and labour necessary for full completion of all works;

.10 All other costs associated with specific requirements pertaining to the maintenance of traffic and temporary signage, as defined in Articles 4.1, “Temporary traffic signage plans” through 4.9 "Personnel and equipment assigned to signaling" in section 015526 and to Article 1.2 “Freestanding fence” in section 015600 of this document.

The payment starts at the beginning of the period and the maximum payable amount is the quantity provided for the corresponding article.

**Item 6.3 – Complementary signage panels**

Complementary signage panels shall be paid per square meter of compliant panels installed for the duration of the works.

The price tendered for this item shall include, without being limited to, fabrication, signed and sealed drawings by an engineer member of OIQ, certifications, panel installation including all equipment required (trucks and platforms), posts, required cross-bracing, hardware, labour, re-location as often as necessary, upkeep including snow and ice removal or replacement in the event of breakage or vandalism, covering/uncovering as often as necessary, as well as demobilization upon conclusion of the works and temporary signage during these operations.

The price tendered for the work provided for in this item is payable in the following ways:

.1 A first amount corresponding to 25% of the amount tendered for this item, is payable at the time of installation is completed.

.2 The balance of the amount tendered for this item is payable on a prorated basis according to the progress of the work.

**Item 6.4 – Information panels on coroplast**

Fabrication and installation of information panels on coroplast shall be paid per square meter of compliant panels installed for the duration of the works.

The price tendered for this item shall include, without being limited to, fabrication, printing, signed and sealed drawings by an engineer member of OIQ, certifications, panel installation including all equipment required (trucks and platforms), posts, required cross-bracing, plywood, hardware, labour, re-location as often as necessary, upkeep including snow and ice removal, covering/uncovering as often as necessary, as well as demobilization upon conclusion of the works and temporary signage during these operations.

The price tendered for the work provided for in this item is payable in the following ways:

.3 A first amount corresponding to 25% of the amount tendered for this item, is payable at the time of installation is completed.

.4 The balance of the amount tendered for this item is payable on a prorated basis according to the progress of the work.

**END OF SECTION**

## PART 1 – GENERAL

### 1.1 General

.1 This section specifies the general requirements and procedures for the submission of shop drawings, product descriptions and samples by the Contractor to the Engineer for verification purposes. Other additional specific requirements are found in the relevant sections.

.2 Do not undertake the work until the submitted documents or samples have been reviewed by the Engineer.

.3 Present shop drawings, product data, samples and mock-ups in SI metric units.

.4 Where items or information is (are) not available in SI metric units, converted values are acceptable.

.5 The Contractor's liability for errors and omissions in the documents submitted is not relieved by Parks Canada Representative's review.

.6 At the time documents or samples are submitted, notify the Engineer in writing of any derogations from the requirements of the contract documents, stating the reasons for these derogations.

.7 The Contractor shall be held liable with respect to derogations from contractual requirements, even if the Engineer checked the documents or samples submitted, except in the case where the latter agrees in writing to a given derogation.

.8 Make all the changes the Engineer deems appropriate with regard to contractual documents and resubmit documents or samples as directed by the Engineer.

.9 When resubmitting documents or samples, notify Parks Canada Representative in writing of revisions other than those requested.

### 1.2 Requirements related to the submittal of documents or samples

.1 Coordinate the submission of documents or samples required with project requirements and contract documents. Documents or samples submitted individually will not be checked until all related information is available.

.2 Allow the Engineer five (5) working days to verify the documents or samples submitted.

.3 The cover letter provided in two (2) copies shall contain the following information:

1. The date;

2. The project name and number;
3. The Contractor's name and address;
4. The name and the number of shop drawings, product descriptions and samples submitted;
5. Any other relevant information.

.4 The Contractor's stamp and signature of its authorized representative attesting that the documents or samples submitted have been approved, that the measures implemented on site were verified, and that everything is in compliance with the contract documents;

.5 The documents or samples submitted shall also bear the following information:

1. The preparation and revision dates;

2. The project name and number;

3. The name and address of:

.1 The subcontractor;
.2 The supplier;
.3 The manufacturer.

.6 Details of the appropriate parts of the structures, as required:

1. Fabrication details;

2. Layout details showing dimensions, including identified field dimensions, and clearances required;

3. Installation details;

4. Capacities of the elements or of the entire structure;

5. Characteristics relating to performance or efficiency;

6. Applicable standards;

7. Design loads;

8. Wiring diagrams (if required);

9. Relationship to adjacent work.

.7 Once the engineer has checked the documents submitted, the Contractor shall distribute copies.

## 1.3 Shop drawings

.1 Shop drawings: original drawings or modified standardized drawings provided by the Contractor and illustrating the parts of the structure that applies to the current works.

.2 Shop drawing format: 750 x 1000 mm.

.3 Submit shop drawings as follows:

1. PDF version and two (2) printed copies.

.4 Make necessary references to appropriate parts of the contract documents.

## 1.4 Product description

.1 Product description: manufacturer's catalog pages, performance or yield graphs and diagrams to illustrate standard manufactured products.

.2 Submit four (4) copies of product descriptions.

.3 Sheet dimensions: 215 x 280 mm, maximum of three (3) modules.

.4 Delete any information that does not apply to the present works.

.5 Add to the standard information any additional information relevant to the present works.

.6 Make the necessary references to appropriate parts of the contract documents.

## 1.5 Product samples

.1 Samples: material samples, equipment, quality, finish or execution mode.

.2 If the color, pattern or texture are to be used as selection criteria, submit the full range of product samples.

.3 Once checked and approved, the product samples will serve as quality standard for the purposes of the present works.

## 1.6 Structure samples

.1 Samples: structures constructed on site using the materials and the prescribed execution mode.

.2 Complete structures samples in locations deemed acceptable by the Engineer.

.3 Once checked and approved, the structure samples will serve as quality standard for the purposes of the present works.

## 1.7 Shop drawing review

.1 The review of the shop drawings by Parks Canada or its representatives has the sole purpose of ensuring compliance with the general design.

This review does not mean that Parks Canada or its representatives approve the detailed design in the shop drawings; that remains the responsibility of the Contractor who submits them. Such a review also does not relieve the Contractor from its liability for any errors or omissions on the shop drawings nor its responsibility to meet construction requirements and comply with contract documents. Without limiting the foregoing general considerations, the Contractor is responsible on the site for the manufacturing or construction techniques and installation, as well as the coordination of all subcontractors' work.

## 1.8 Drawings of temporary structures

.1 The term "drawings of temporary structures" refers to shoring drawings, scaffolding drawings, enclosure drawings, walkway and other access devices drawings, environmental protection measure drawings, lane closure drawings, material and equipment transportation plans, traffic signage drawings, lifting drawings, work methods and calculation notes, lifting methods, diagrams or any other documents necessary for execution of the works, based on drawings, specifications and site conditions.

.2 Drawings for temporary structures and attached documents shall bear the stamp and signature of a professional engineer registered or licensed in the Province of Quebec, Canada.

**END OF SECTION**

## PART 1 – GENERAL

### 1.1 Related sections

.1 Section 013400 – Shop drawings, product and sample descriptions

### 1.2 References

.1 Transportation of Dangerous Goods Act.

.2 Canadian Council of Ministers of the Environment (CCME) documentation

.3 Cahier des charges et devis généraux (CCDG) – Construction et réparation. MTQ

### 1.3 Action and informational submittals

.1 Submit submittals in accordance with Section 013400, “Shop drawings, product descriptions and samples.”

.2 Submit documentation certifying that hazardous materials employees have been trained, tested, and certified to safely and effectively carry out their assigned duties.

.3 Submit the delivery notes of the materials to the Engineer.

### 1.4 Regulatory requirements

.1 Provide erosion and sediment control measures in accordance with requirements in force.

### 1.5 Work sequencing and schedule

.1 Do not commence works involving contact with potentially contaminated materials until decontamination facilities are operational and approved by the Engineer or the Departmental Representative.

### 1.6 Placing and stockpiling soils

.1 Provide, maintain, and operate storage/stockpiling facilities as required.

.2 Install waterproof liner at proposed stockpile locations to prevent contact with contaminated soil. Equip facility with tarps capable of covering stockpiled material until the Engineer or the Departmental Representative advises the Contractor to dispose of material off site.

### 1.7 Design requirements

.1 Water treatment facility:

.1 Design and operating requirements: Design water treatment/filtering plant to filter water generated from dewatering excavations and work zones, and to meet discharge requirements of authority having jurisdiction; it shall also be capable of capturing oil, suspended solids, particles, and filtering water through a 5-micron particule retaining filter prior to discharge.

.2 Ensure that discharge from site complies with applicable permit requirements and limitations.

.3 Provide piping to transfer liquid/solid mixtures generated by dewatering operations that require water filtration to water filtering plant.

.4 Design water filtering operations to be able to receive liquid/solid mixtures, with sufficient capacity to prevent delay in dewatering operations.

.2 Piping: Use suitable material type, of sufficient diameter and structural thickness for purpose intended, and having been satisfactorily tested for leaks with potable water in the presence of the Engineer or Departmental Representative before handling wastewater.

.1 Installation

.1 Provide labour, materials, and equipment and perform work required for setup and construction of water filtering plant.

.2 Install component systems in accordance with installation procedures and as indicated on the temporary works drawings provided.

.3 Once the system has been installed, implement initial operation testing, in accordance with procedures developed by the Contractor and submitted to the Engineer or Departmental Representative for review.

.4 Install piping in accordance with manufacturer's instructions and test for leakage using potable water prior to commencing dewatering and filtering operations.

.3 Initial testing: Performance of water treatment/filtering plant provided by the Contractor will initially be evaluated by the Engineer or Departmental Representative, who will inspect the aspects hereunder.

.4 Operation

.1 Based on analytical results obtained by Departmental Representative, make system modifications required for effluent to

meet relevant criteria, or continue with normal dewatering operations as directed by the Departmental Representative.

.2 Water treatment/filtering plant shall be operated by experienced, qualified personnel in accordance with manufacturer's instructions and procedures submitted by the Contractor and approved by the Departmental Representative.

.5 Decommissioning/Dismantling

.1 Decontaminate and remove salvageable components of water filtering plant including water filtering system, pumps, piping, and electrical equipment.

.2 Dispose of non-salvageable equipment and materials at approved off-site disposal facility.

.6 Excavate and dispose of clean soil contaminated by the Contractor's activities at his own cost.

**1.8 Progress cleaning**

.1 Maintain work site and surrounding area’s cleanliness, in accordance with federal, provincial, and local fire and safety laws, ordinances, codes, and regulations.

.2 Coordinate cleaning operations with disposal operations to prevent accumulation of dust, dirt, debris, rubbish, and waste materials.

**1.9 Removal and disposal**

.1 Dispose of following materials at appropriate off-site facility identified by the Contractor and approved by the Engineer or Departmental Representative:

.1 Debris including excess construction material;

.2 Disposable personal protective equipment (PPE) worn during final cleaning;

.2 Minimize the production of hazardous waste as much as possible. Take necessary precautions to avoid mixing clean and contaminated wastes.

**1.10 Contaminated soil**

.1 Within the context of this project, it is considered that the soil is in “B-C” range.

.2 Excavated materials in the “A-B” and “BC” ranges shall not be reuse for as Class B materials.

.3 Unusable or surplus excavation and backfill materials and those with levels of contamination greater than “C” become the Contractor’s property, and shall be disposed of off-site. All these materials shall be disposed of in accordance with the interim excavated contaminated soils management table prepared by the MELCCFP. The Contractor shall submit documents to the Engineer certifying that the materials were disposed of at MELCCFP-authorized sites.

.4 Bituminous concrete pavement and cement blocks are considered to be dry materials, and their disposal is subject to the *Regulation respecting the landfilling and incineration of residual materials* under the *Environment Quality Act*. The Contractor shall dispose of such in MELCCFP-authorized construction or demolition waste landfills; concrete may be disposed of at an MELCCFP-authorized crushing site.

.5 The Contractor shall not reuse bituminous pavement or cement concrete debris in the backfill.

.6 The Contractor shall assume all costs associated with loading, transporting, unloading, disposal and all other incidental costs for disposing of bituminous concrete and cement concrete blocks.

## 1.11 Logbooks

.1 Maintain bills of ladings for a minimum of three hundred seventy-five (375) days from date of shipment, or a longer period as required by applicable laws or regulations.

**END OF SECTION**

## PART 1 – GENERAL

### 1.1 Compliance with laws and regulations

.1 The Contractor is required to comply with all provincial, municipal or federal regulations and any other Act or any laws relating to the present works. The Contractor is required to assume responsibility for any violation of the relevant laws and regulations. The following is a non-exhaustive list of laws and regulations that will be the subject of special attention, namely:

1. The National Parks Act;
2. The Fisheries Act;
3. The Environmental Protection Act;
4. Species at Risk Act (S.C. 2002, ch. 29);
5. Migratory Birds Convention Act, 1994 (S.C. 1994, ch. 22);
6. Canadian Environmental Quality Guidelines (CEQGs, 1999);
7. Règlement numéro 2008-47 sur l'assainissement des eaux de la Communauté métropolitaine de Montréal (CMM, 2008);
8. Historic Canals Regulations (SOR/93-220).

.2 In addition to complying with laws and regulations stipulated in the preceding paragraph, the Contractor shall comply with the mitigation measures and residual impacts listed in Appendix 1 of the present section.

### 1.2 National Parks Act

.1 All works to be performed within the park boundaries shall be in accordance with the provisions of the National Parks Act.

### 1.3 Fisheries Act

.1 The Fisheries Act (FA) stipulates, among other things:

1. Article 34 (1) – that all projects undertaken in aquatic environments shall not result in death of fish.

2. Article 35 (1) – that all projects undertaken in aquatic environments shall not result in harmful alteration, disruption or destruction of fish habitat;

3. In Article 36 (3) – that it is prohibited to reject harmful substances into waters where fish inhabit;

4. In Article 38 (4) – that it is mandatory to report any case of a spill of harmful substances into waters inhabited by fish.

**1.4 Environmental Protection Act**

.1 The Canadian Environmental Protection Act (CEPA) stipulates, among other things:

1. In Article 95 (1) – that it is mandatory to report any case of a spill of Toxic Substances (Annex 1 of CEPA) in the environment.

**1.5 Construction site**

.1 All trucks and machinery shall be in good working condition to avoid any oil, grease or fuel leaks. Any equipment emitting a sound level or exhaust gases in excess of normal levels shall be repaired or altered to make them acceptable.

.2 General maintenance and fueling of equipment and vehicles as well as handling and storage of hydrocarbons will be performed at a distance of more than thirty (30) meters from the bank of the canal.

.3 The movement of heavy vehicles and use of noisy machinery will be minimized as much as possible.

.4 In order to comply with the Federal Sustainable Development Strategy and to raise awareness about the importance of responsible behaviour, the Contractor shall ensure that the machinery is used in an environmentally respectful manner. For example, machinery that produces greenhouse gases (vehicles, heavy machinery, generator, etc.) shall not run unnecessarily.

**1.6 Action and informational submittals**

.1 Submit submittals in accordance with Section 013400, “Shop drawings, product descriptions and samples.”

.2 Technical data sheets:

.1 Submit the required manufacturer’s technical data sheets, instructions and documentation for products used when performing the works. Technical data sheets shall indicate product

characteristics, performance criteria, physical size, finish and limitations.

.2 Submit two (2) copies of material safety data sheets, required under WHMIS terms.

.3 Prior to commencing construction activities or delivery of materials and equipment to site, provide Environmental Protection Plan for review and approval by Departmental Representative.

.4 Ensure Environmental Protection Plan includes comprehensive overview of known or potential environmental issues to be resolved during construction.

.5 Address topics at level of detail commensurate with environmental issue and required construction tasks.

.6 Include in Environmental Protection Plan:

.1 Names of persons responsible for ensuring adherence to Environmental Protection Plan;

.2 Names and qualifications of persons responsible for exit manifests of hazardous waste to be removed from site;

.3 Names and qualifications of persons responsible for training work site personnel;

.4 Description of environmental protection personnel training program;

.5 Drawings showing location of temporary excavations, access roads, sanitary facilities, excess or spoil material stockpiles, including methods to control runoff waters and contain materials on site;

.6 Traffic control plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather.

.1 Ensure plans include measures to minimize amount of materials transported onto paved public roads by vehicles or runoff waters;

.7 Spill control plan including procedures to implement, instructions to follow, and reports to be completed in event of unforeseen spill of regulated substance;

.8 Non-hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris;

.9 Air pollution control plan detailing provisions to assure that dust, debris, materials, and trash, are contained on project site;

.10 Contaminant prevention plan identifying potentially hazardous substances to be used on work 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 storing and handling these materials;

.11 Wastewater management plan identifying methods and procedures for management of wastewaters directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used to flush lines;

.12 A plan to identify and protect wetlands as well as historical, archaeological, cultural and biological resources;

.13 Pesticide treatment plan, as required, approved by the Parks Canada Agency process;

.14 Erosion and sediment control plan identifying type and location of measures to be implemented, including reporting requirements to ensure that control measures are in compliance with federal, provincial, and municipal laws and regulations;

.15 Work zone plan for each pedestrian bridge, indicating proposed activity in each work zone and identifying areas of limited use or non-use. Ensure plan includes measures for identifying boundaries of usable areas and methods for protecting elements to be preserved within authorized work zones;

.16 An exemple of an Environmental Protection Plan is showned in Appendix 2 of the present section.

**1.7 Fires**

.1 Fires and the burning of waste on the site are forbidden.

**1.8 Turbidity curtain**

.1 Install a sediment trap for use in aquatic environments, composed of a membrane suspended from a float and ballasted at the base by chains or other types of weight, to isolate the rest of the water body from the portion disturbed by the works in progress, to prevent sediments in suspension from spreading. This curtain shall comply with requirements of authorities having jurisdiction. The turbidity curtain shall remain in place until the Engineer authorizes its removal. The turbidity curtain shall be removed or dismantled when works are fully complete.

.2 Regularly inspect turbidity curtain installed to ensure it has not been moved by the current, and maintain as necessary to ensure it remains effective at all times.

.3 Remove turbidity curtain in a timely manner.

**1.9 Erosion and sedimentation control**

.1 Any work that results in leaving bare, unconsolidated soil (excavation, disturbed soil, stockpiled materials, etc.) shall include erosion and sedimentation control measures to prevent sediments from migrating to hydrous environments. As work progresses, ensure all disturbed areas are stabilized permanently. If there will be a delay before permanent stabilization, temporary erosion and sedimentation control measures shall remain in place until the Engineer authorizes their dismantling. Temporary measures shall be removed or dismantled upon completion of works.

.2 Install an erosion and sedimentation control barrier to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways. These measures shall comply with requirements of local authorities having jurisdiction.

.3 Any temporary shoaling of unconsolidated materials such as soil, located less than thirty (30) metres from a hydrous environment for a period of more than twenty-four (24) hours shall be protected by a sediment trap to prevent sediment from migrating toward the hydrous environment.

.4 Inspect, repair, and maintain erosion and sedimentation control measures in good working condition at all times until permanent vegetation has been established.

.5 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

**1.10 Drainage**

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

.2 Ensure water pumped into a waterway, sewer or drainage system is free of suspended materials.

.3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

.4 The Engineer may require the Contractor to, at its own expense, change the proposed wastewater control method or system if they do not meet the minimum quality standards for discharge into the environment.

**1.11 Site clearing and plant protection**

.1 Protect trees and plants on site and adjacent properties as instructed by the Engineer.

.2 Wrap trees and shrubs adjacent to construction work, storage areas and trucking lanes in burlap. If necessary, encase with protective wood framework from grade level to minimum height of two (2) metres.

.3 Removing trees and shrubs in the work zone is prohibited unless written consent was received from the Parks Canada manager prior to start of works.

.4 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage. Avoid unnecessary traffic, dumping and storage of materials over root zones.

.5 Minimize stripping of topsoil and vegetation.

**1.12 Work adjacent to waterways**

.1 Waterways shall remain free of excavated fill, waste material and debris.

.2 Discharge of debris or wastewater into the Canal is prohibited.

.3 No borrow materials may be taken from the Canal bed.

.4 All debris accidentally introduced into a waterway shall be removed as soon as possible.

.5 Machinery that must circulate or operate less than thirty (30) metres from a waterway shall use biodegradable hydraulic oil.

.6 Construction equipment to be operated on land only.

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

.8 Blasting on the construction site is not permitted.

**1.13 Pollution prevention**

.1 Maintain temporary facilities to prevent erosion and pollution and implemented under the present contract.

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

.3 Build temporary shelters, if required, to prevent the sandblasting materials and other foreign matter from contaminating the air beyond the area of application.

.4 Wet down dry materials and cover the wastes to prevent the wind to raise dust and debris. Eliminate and remove any dust from temporary roads.

.5 Provide onsite availability of absorbent products in sufficient quantities to be able to cleanup any spill of contaminants such as hydrocarbons, solvents and other similar products.

**1.14 Waste disposal**

.1 Do not burn or bury rubbish or waste materials on site.

.2 It is forbidden to evacuate waste materials or contaminant materials such as mineral spirits, oil or paint thinners, paint and waste oils by pouring them into the neighboring waterway, storm sewers or sanitary sewers.

.3 The Contractor is responsible to ensure that no debris falls into the Lachine Canal.

.4 Dispose of all wastes and excess materials off-site at a landfill approved by the relevant authorities and the Engineer. Contractor shall comply with requirements of Section 013513.43, “Special procedures – Contaminated sites.”

.5 Provide a document to the Engineer stating the place of disposal of wastes and excavation materials, and certifying it is approved.

**1.15 Storage and handling of petroleum products**

.1 The storage and handling of petroleum products (gasoline, motor oil and hydraulic oil) on the site may present risks of spillage. Implement whatever protective measures necessary to minimize risk of accidental spills. The Contractor shall maintain a minimum amount of equipment at all times.

.2 Handle petroleum products and any other contaminant carefully, on land and in an appropriate area; carefully store and arrange for appropriate disposal.

.3 Provide emergency measures to adopt in case of equipment failure or accidental spillage. Have defective equipment repaired as quickly as possible. In case of an accidental spill, quickly contain and recover spilled product, clean the area and contaminated equipment, send contaminated soil to an authorized site and restore the affected area.

**1.16 Contaminated soil**

.1 The Contractor is responsible for planning applicable methods and procedures for excavation, storing at the work site and disposal at authorized sites.

.2 These methods and procedures shall comply with MELCCFP requirements and section 013513.43, “Special Procedures – Contaminated sites.”

.3 All costs associated with managing contaminated soil shall be included in the price for items entitled, “Transportation and disposal – ‘A-B’ contaminated soils” and “Transportation and disposal – ‘C’ and higher contaminated soils,” for which payment terms are stipulated in section 012900, “Measurement for payment.”

**1.17 Notification of non-compliances**

.1 The Departmental Representative or Engineer shall notify the Contractor in writing of any observed non-compliance with federal, provincial or municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection Plan.

.2 Upon receipt of such notice, Contractor shall inform Departmental Representative or Engineer of proposed corrective actions and then implement those actions upon receipt of approval.

.1 Contractor shall wait for written approval from Departmental Representative or Engineer before implementing proposed corrective actions.

.3 The Departmental Representative or Engineer will issue a stop order of work until satisfactory corrective action has been taken.

.4 No time extensions or equitable adjustments shall be granted to Contractor for such suspensions.

**1.18 Cleaning**

.1 Progress cleaning: Clean in accordance with Section 017100, “Cleaning”.

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

.2 Ensure waterways as well as public storm and sanitary sewers remain free of waste and volatile materials disposal.

.3 Final cleaning: upon completion, remove surplus materials, rubbish, tools and equipment in accordance with Section 017100, “Cleaning”.

.4 Waste management: separate waste materials for reuse and recycling, in accordance with the various sections of this contract.

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

**1.19 Payment procedures**

All costs associated with environmental protection, including all requirements set out in the present section, shall be included in the price for the item entitled, “Environmental protection including trees and shrubs” for which payment terms are stipulated in section 012900, “Measurement for payment”.

**ANNEX 1**

**Mitigation measures and residual impacts Table**

## Appendix 1 : Mitigation measures and residual impacts Table – CLAC - 2439

| Project elements or activities | Environmental elements | Description of environmental effects | Impact mitigation measures | Significance of residual effects |
|---|---|---|---|---|
| 1. Mobilization<br>Use and movement of machinery<br>Transportation of materials and equipment<br>Material storage<br>Implementation of access roads, construction areas and temporary facilities<br>Embankment riprap<br>Site restoration | Air quality and human health | • Decline in air quality caused by particle emission (dust)<br>• $CO_2$ machinery emission | 1.1 Make sure that exhaust and emission control systems of equipment and vehicles are in good operating condition.<br>1.2 Avoid idling the engines unnecessarily when the vehicles are stationary.<br>1.3 Respect the municipal current regulations (Regulation 90 of the Metropolitan Community of Montreal) regarding dust emissions into the air.<br>1.4 Ensure that the fine particle materials used for construction as well as the residues are confined during their transport.<br>1.5 If necessary, cover the stored fine particle materials with a canvas, the particles of which may be carried by the wind.<br>1.6 Avoid handling and transporting materials that can easily erode in high wind conditions or when a plume of dust is visible.<br>1.7 Put in place appropriate measures to reduce dust emissions to the air (e.g. watering dry materials, sweeping, using tarpaulins, etc.). Use water as a dust suppressant.<br>1.8 Clean access roads and traffic lanes regularly during the work. | Negligible and localized residual impact |
| | Noise level | • Increase in ambient noise level | 1.9 Respect the municipal current regulations regarding noise and work schedule.<br>1.10 Whenever possible, plan noisy activities so as to minimize the impact on visitors, especially in the vicinity of residential areas and high traffic areas.<br>1.11 Ensure the proper functioning of the mufflers or the noise canceling device of noisy equipment.<br>1.12 Avoid the flapping of the rear panels of dump trucks. | None once work is completed |
| | Water and soil/sediment quality | • Soil compaction and rut formation in areas of mobilization and movement of machinery<br>• Risk of hydrocarbon spill or other hazardous substances in soil/sediment or in water<br>• Soil erosion, loss of topsoil and exposure of sub-soils | 1.13 Maintain in good condition and regularly upkeep machinery and equipment for the duration of the work. Repair or remove leaking vehicles or equipment from the job site immediately.<br>1.14 Use a biodegradable vegetable oil hydraulic system for all the machinery circulating on the shore, on the water or on a temporary installation in the canal. Proof of the application of this mitigation measure may be required. If applicable, clean all equipment used in water before entering it into the aquatic environment, and inspect it daily to make sure there is no leak.<br>1.15 The storage of hydrocarbon products and hazardous materials, as well as the maintenance, refueling and cleaning of machinery shall be carried out at more than 30 m from the water, on a site provided for this purpose where there is no risk of contamination of soil and ground and surface water. If this is not possible, the surface area of this site shall be impermeable and have the capacity to contain all of the hydrocarbon products in the event of spills or leaks. All these activities shall be carried out under constant supervision. The location of the cleaning and refueling areas shall be approved in advance by the Representative of Parks Canada. | Negligible and localized residual impact |

| Project elements or activities | Environmental elements | Description of environmental effects | Impact mitigation measures | Significance of residual effects |
|---|---|---|---|---|
| | | • Modification of slopes, terrain and landscape reliefs. | 1.16 Lock up the hazardous materials that are left on the site outside of site working hours.<br>1.17 Refuel on a waterproof fuel mat with a berm or in a containment tank. Clean up leaks and spills that occur during refueling and properly dispose of contaminated material. Never dispose of or deposit fuel in the environment or in a body of water.<br>1.18 Clean tools and equipment off-site. If it is necessary to do it on site, cleaning shall be done at a location at least 30 m from any body of water.<br>1.19 Do not leave any vehicle, machinery or gasoline-powered equipment on a jetty or less than 10 m from the water outside of working hours or during prolonged site closings, unless it is confined in a watertight enclosure. If this is not possible, soil protection measures shall be installed under the equipment or machinery during the entire above-mentioned period (e.g. containment tank having a volume equivalent to at least 110 % of the volume of the fuel tank of the equipment or machinery).<br>1.20 Use retention tanks (110 % capacity) or waterproof fuel mats with a berm for all stationary equipment and machinery (generators, compressors, etc.) located on the shore and inspect the installations during rainy periods to avoid overflow.<br>1.21 At all times during the work, have sufficient hydrocarbon products recovery kits on site (containment barriers, absorbent rollers, watertight containers, etc.) and ensure that workers are trained to intervene quickly in the event of leak or spill.<br>1.22 Provide an emergency procedure and a communication protocol in the event of an environmental incident.<br>1.23 In the event of a spill, report the situation immediately to the appropriate responders and to the emergency department of Environment and Climate Change Canada and (1-866-283-2333). Notify the Coast Guard for any water spill (1-800-363-4735).<br>1.24 In the event of an environmental incident, control the leak, confine the spilled product to limit its extent and prevent it from reaching sensitive areas, recover the contaminated material and send it to a site authorized by the MELCCFP.<br>1.25 Implement additional sediment and erosion control measures if the soil is disturbed or exposed.<br>1.26 Whenever possible, use erosion and sedimentation control products made from 100% biodegradable materials (e.g. burlap, sisal or coconut fiber). Ensure that the support materials are also biodegradable.<br>1.27 Any temporary heap of unconsolidated materials located less than 30 m from an aquatic environment and left in place for a period of more than 24 hours shall be protected with a sediment barrier or covered with a geotextile to avoid transporting sediment into the water.<br>1.28 Avoid vehicle movements during periods of heavy rain when the soil becomes saturated with water.<br>1.29 Ensure that no deleterious substance is immersed or released into the aquatic environment or disposed of in a location likely to contaminate the aquatic environment, as required by the Fisheries Act and the Migratory Birds Convention Act, 1994.<br>1.30 Surface water in work areas shall be confined, sampled and treated, if required. Otherwise, they shall be pumped in a terrestrial environment into a zone of resistant buffer vegetation for infiltration, far from the water and bare soil, or in a basin to allow the settling of suspended matter. | |

| Project elements or activities | Environmental elements | Description of environmental effects | Impact mitigation measures | Significance of residual effects |
|---|---|---|---|---|
| | | | 1.31 Obtain the authorization of the Representative of Parks Canada before proceeding with any discharge of water into the environment.<br>1.32 Intercept runoff water from outside the construction site and keep it outside the site by transporting it to stabilized installations or places.<br>1.33 Canal water cannot be used to wash equipment or other site operations without the prior authorization from the Representative of Parks Canada.<br>1.34 No snow during snow removal shall be disposed of in the canal, in accordance with the Historic Canals Regulations. | |
| | Flora and terrestrial wildlife | • Damage to vegetation and grassy areas<br>• Damage to the root system, branches and bark of trees due to movement of machinery<br>• Introduction or dispersal of invasive alien species<br>• Disturbances and changes in wildlife movements<br>• Destruction or modification of the habitat<br>• Mortality caused by project activities. | 1.35 Recommend the mobilization / movement of vehicles on durable or already disturbed surfaces (e.g. paved road, gravel surface, disturbed area with high resilience).<br>1.36 Limit storage and temporary construction areas to durable or already disturbed surfaces. If this is not possible, the proposed sectors shall have been approved by Parks Canada.<br>1.37 Establish and delimit a protection area around the trees and shrubs to be preserved (e.g. ribbons, barriers, etc.) so as not to damage them or affect the root network.<br>1.38 Rehabilitate land surfaces and vegetation damaged by the work. This includes revegetating disturbed soils and re-establishing plant cover in areas previously approved by Parks Canada using a variety of fast growing, low maintenance native species adapted to the project area to enhance the local plant community.<br>1.39 Submit plant species and seed mixtures for Parks Canada approval. The restoration elements shall ensure that the environment is equivalent or improved compared to the situation prior to the intervention.<br>1.40 Monitor disturbed and revegetated plots until the Representative of Parks Canada establishes that native vegetation is growing well and that the spread of invasive alien species has been prevented.<br>1.41 Ensure that the machinery is clean and free of invasive species and noxious weeds when it arrives at the site and maintain it in this condition thereafter. At the end of the work, thoroughly clean the machinery that has come into contact with invasive exotic species in order to avoid dispersal in new areas.<br>1.42 Choose erosion and sedimentation control products that reduce the risk of attracting or entangling wildlife and that prevent the introduction of invasive alien species.<br>1.43 If animals are seen inside or near the site, give them the opportunity to leave the area and move away from areas of potential conflict. | Negligible localized residual impact |
| | Aquatic resources | • Disturbance / stress for various species of fish<br>• Introduction or dispersal of invasive alien species | 1.44 Measure 5.31.<br>1.45 Encourage the completion of work during the lowering of the canal water or during the period prescribed by Fisheries and Oceans Canada to ensure the protection of fish (August 1st to March 31st for species other than salmonids).<br>1.46 No permanent encroachment shall be made on the water to avoid causing loss of fish habitat, except as provided for in the estimate and validated by Fisheries and Oceans Canada. | Negligible localized residual impact |

| Project elements or activities | Environmental elements | Description of environmental effects | Impact mitigation measures | Significance of residual effects |
|---|---|---|---|---|
| | | | 1.47 Implement mitigation measures in accordance with the requirements and recommendations of Fisheries and Oceans Canada.<br>1.48 Do not take any borrowing material from the water.<br>1.49 The method of accessing the banks and the canal, if applicable, shall minimize the movement of machinery and shall previously approved by the Parks Canada Representative.<br>1.50 Limit the movement of machinery only on temporary surfaces and to the accesses provided for this purpose.<br>1.51 The machinery shall in no case circulate directly on the channel bed.<br>1.52 Ensure that the canal bed is dry before installing a temporary installation in the canal.<br>1.53 Before the construction of a temporary structure, cover the bottom of the canal, the banks and all the surfaces that will be affected by the structure with a thick nonwoven geotextile. This measure is used to facilitate recovery of materials during the dismantling of the structure and protect the integrity of the soil in place. If granular material is deposited, ensure that the geotextile protrudes sufficiently on each side of the material.<br>1.54 Take all necessary measures to minimize suspension and displacement of fine particles during installation and removal of temporary works.<br>1.55 All temporary work shall be stabilized to avoid causing erosion and sedimentation which could damage the integrity of the environment.<br>1.56 At the end of the work, all the temporary works shall be removed and demobilized, and the work site must be returned to its natural state. | |
| | Air quality and human health | • Reduction in the quality of the ambient air by emission of particles (dust) | 1.57 Measures 1.3 to 1.7.<br>1.58 Use work methods that generate as little dust as possible.<br>1.59 Respect the regulations in place during demolition work. | Negligible localized residual impact |
| 2. Vegetation removal | Flora and terrestrial wildlife | • Damage to vegetation<br>• Destruction or modification of wildlife habitat<br>• Damage to nests and/or disturbance of nesting birds<br>• Introduction or dispersal of invasive alien species | 2.1 Measures 1.37, 1.38 and 1.41.<br>2.2 No felling/pruning shall be done without the prior approval of Parks Canada. If necessary, clearly delimit the area where the vegetation will be removed and mark the trees to be preserved.<br>2.3 Carry out deforestation activities outside the breeding season of migratory birds, which extends from approximately the beginning of April to the end of August for the majority of species in southern Quebec.<br>2.4 If work must be carried out during the bird breeding period, an inventory shall be carried out prior to the planned activities that may have impacts on the nests. If nests are found, a protection zone should be established until the nestlings have left the nest.<br>2.5 Check for dens in the area before cleaning up the vegetation and avoid disturbing the occupied dens. | 7. Vegetation removal |

| Project elements or activities | Environmental elements | Description of environmental effects | Impact mitigation measures | Significance of residual effects |
|---|---|---|---|---|
| | | | 2.6 Trunks and other recovered materials shall be transported to a storage site without spreading debris and without damaging standing trees or landscape elements outside the limits indicated for clearing or storage. They shall not be dragged into the body of water.<br>2.7 Vegetation debris shall be removed from the right-of-way as soon as possible and transported off- site for disposal. Residues of invasive alien species shall be disposed of at an accepting landfill, or at an incineration site.<br>2.8 At the request of Parks Canada, the trees and shrubs to be felled shall be replaced during the rehabilitation phase at the end of the work.<br>2.9 Meet any other requirements from the Parks Canada Representative and the site manager in terms of vegetation management. | |
| 3. Concrete demolition of abutments<br>Removal and placement of an asphalt paving<br>Granular foundation | Quality of air, sound level and human health | • Decrease in ambient air quality by emission of particles (dust) and VOCs<br>• Increase in ambient noise level | 3.1 Measures 1.3 to 1.12<br>3.2 Employ working methods which generate as little dust as possible.<br>3.3 Respect the regulations in place during demolition work.<br>3.4 Comply with Environment and Climate Change Canada's (ECCC) *Code of Practice for the Reduction of Volatile Organic Compound Emissions from Fluidified Bitumen and Bitumen Emulsion*.<br>3.5 Whenever possible, use bituminous mixes from recycled bituminous aggregates and cold or lukewarm manufacturing processes, for example, in order to reduce the emission of greenhouse gases and save energy.<br>3.6 Use products with low emission of volatile organic compounds (VOCs) (e.g. bitumen emulsion rather than fluidized bitumen). | Negligible localized residual impact |
| | Soil and Water / sediment quality | • Input of construction and demolition debris<br>• Degradation of soil quality<br>• Increase in suspended matters and particles in the canal | 2.1 Undert e concrete demolition, granular foundation and asphalting work outside periods of wet, windy or rainy weather when the risks of erosion and sedimentation are higher.<br>2.2 Plan measures to recover all debris and residue from the demolition of concrete and the preparation of concrete components (e.g. tarpaulin, geotextile, shelter, etc.).<br>2.3 Clean construction debris progressively and dispose of them in sites authorized by the MELCCFP.<br>2.4 Do not discharge any cuttings, materials, waste or debris into the aquatic environment. Remove any debris accidentally introduced into the aquatic environment as soon as possible.<br>2.5 The surplus concrete from the concrete pumps shall be poured into a confined and watertight enclosure. After hardening, concrete residues shall be managed with construction waste and disposed of in an approved facility.<br>2.6 Mix concrete on tarpaulins as far as possible from the canal. Avoid fresh, wet, uncured cement and concrete dust from coming into contact with bodies of water.<br>2.7 The washing water of the concrete mixers as well as the treatment water shall be collected in a watertight basin fitted out so as to avoid any flow into the environment.<br>2.8 Wash water can be taken over by the concrete supplier and brought back to the concrete factory for disposal. Otherwise, these waters shall be confined, sampled and treated. | Negligible localized residual impact |

| Project elements or activities | Environmental elements | Description of environmental effects | Impact mitigation measures | Significance of residual effects |
|---|---|---|---|---|
| 5. Land and canal excavation and backfill<br><br>Site restoration | Water and soil/sediment quality and Human health | • Migration of contaminants in soils, water and sediments<br>• Soil erosion and sediment transport in the aquatic environment<br>• Contamination of the new embankment by neighboring soils<br>• Modification of slopes, terrain and landscape reliefs<br>• Reduction in the quality of the ambient air by emission of particles (dust)<br>• GHG emission<br>• Increase in ambient noise level | 3.1 Measures 1.3 to 1.12 and 1.28.<br>3.2 Submit a contaminated soil management plan to Parks Canada for approval before proceeding with the excavation work. An additional characterization shall be carried out if the quality of the soil in place is not precisely known.<br>3.3 Manage the excavated soil in accordance with the federal, provincial and municipal laws and regulations applicable to the management of contaminated soils.<br>3.4 Avoid excavation during periods when the soil is saturated, when the rain is abundant and when there is runoff, strong winds or wet snow.<br>3.5 Limit the surface area of reworked and exposed soil and stabilize it as quickly as possible. If necessary, use ground covers, mulch, straw, grass, granular material, an erosion blanket or any other device that can reduce soil erosion in case of prolonged exposure and in places of intensive use.<br>3.6 Limit the time of in-situ storage of excavated materials.<br>3.7 Do not store contaminated excavated material near the body of water. If the land does not allow storage on site, plan the excavation taking into account the opening hours of the authorized disposal sites.<br>3.8 Take the necessary precautions during the temporary storage of contaminated soils to avoid contamination of the underlying and adjacent soils, minimally:<br>- Segregate soils according to their level of contamination and according to the stratigraphy observed.<br>- Store soils on waterproof canvas and cover them or store them in any other type of hermetic containment device. The canvas shall be fixed securely to prevent them from being lifted by the wind.<br>- At all times, ensure that the soil does not migrate to other environments, either by air, by runoff or by vehicle transit.<br>3.9 Move the soil back in place as soon as possible according to the contamination levels initially observed and according to the initial stratigraphic profile.<br>3.10 Excess excavated soils that are contaminated will be stored, transported and disposed off-site in accordance with the provisions of the MELCCFP current policy.<br>3.11 When disposing of soils off-site, keep any document or slip attesting to their disposal in sites authorized by the MELCCFP according to their degree of contamination.<br>3.12 When the soil put back in place exceeds the current CCME recommendations for the residential/park sector and/or criterion B of the MELCCFP, according to Parks Canada requirements, apply a minimum covering of 30 cm of clean soil.<br>3.13 If applicable, any soil imported onto Parks Canada property shall be cultivated land that meets the most recent standards of the City of Montreal and the Bureau de Normalization du Québec.<br>3.14 Use a clean fill material (<A), free of contaminants and unwanted species.<br>3.15 Machinery that has come into contact with contaminated soil shall be properly cleaned before being used in other areas.<br>3.16 New material (e.g. topsoil, controlled backfill) shall be subjected to good compaction in order to avoid any subsidence and minimize erosion.<br>3.17 Rehabilitated surfaces should have a degree of compaction and ventilation corresponding to the initial state (before work) in order to prevent the transport and circulation of soil particles.<br>3.18 Divert runoff from work areas, exposed soil and erodible slopes; ensure that they flow slowly to the surface. | Negligible localized residual impact |

| Project elements or activities | Environmental elements | Description of environmental effects | Impact mitigation measures | Significance of residual effects |
|---|---|---|---|---|
| | | | 3.19 Once the project is complete, ensure good drainage of runoff water, which may include restoring or improving the original drainage conditions. | |
| | Archaeological resources | Damage to remains and archaeological resources during excavations | 3.20 Comply with all the special requirements established by Parks Canada with regard to archaeological monitoring.<br>3.21 In the event that archaeological monitoring is not required for the work and an archaeological vestige (vestige of construction or development, object and fragment of object) is the subject of a fortuitous discovery during excavations, suspend the work in the immediate area of the discovery and notify the Representative of Parks Canada who will then take the necessary measures to protect and preserve the archaeological remains. | Negligible localized residual impact |
| | Terrestrial flora | • Introduction or dispersal of invasive alien species<br>• Damage to vegetation and grassed areas<br>• Damage to the root system | 3.22 Measures 1.35 to 1.43.<br>3.23 In areas where invasive exotic species are present, excavated materials from the construction site (e.g. topsoil, borrow materials, fill, gravel) may not be used in other areas of the Lachine Canal site. Plant materials and residues shall be properly disposed of at approved sites.<br>3.24 Restore the disturbed areas as the work progresses.<br>3.25 If the root system of a tree to be preserved shall be damaged by excavation work, take the following measures:<br>- Cut the roots using a concrete saw (15 cm) and carry out a gradual pickling where the roots are or may be present;<br>- Use a geotextile to cover the bare roots;<br>- Water the affected trees regularly and abundantly during the work;<br>- Restore the crown/roots balance, according to the percentage of loss of the root system, by performing compensatory pruning where the same percentage of branches is removed, prioritizing diseased, harmful, weak and/or oddly positioned branches;<br>3.26 At the end of the work, the ground level shall be identical to that which was present before the work. | Negligible localized residual impact |
| | Aquatic resources | • Disturbance/stress for various species of fish<br>• Contamination and loss of habitat (siltation and modification of the watercourse bed) | 3.27 Measures 1.25 to 1.27 and 1.45 to 1.48 and 2.8.<br>3.28 Implement effective measures to limit the supply of sediment and debris from the site to the aquatic environment (e.g. sediment barrier, berms, sediment trap, sedimentation basin, temporary slope stabilization, diversion of water to vegetation zones). The measures shall remain effective during the temporary closure of the site and during periods of flood or heavy rain. Take care to limit the movement of particles in the body of water when removing the installations.<br>3.29 Carry out regular inspection and maintenance of erosion and sediment control measures during the work.<br>3.30 The sediment and erosion control methods used shall be adapted to the different situations that may be encountered or be substituted by other methods in the event of their ineffectiveness.<br>3.31 Do not deposit materials under the high-water mark limit, unless authorized by Fisheries and Oceans Canada.<br>3.32 Immediately stabilize shorelines or banks disturbed by any activity related to the project to prevent erosion or sedimentation. Vegetate the shore using recognized plant engineering techniques favoring overhanging shrub and herbaceous strata. Revegetation shall be undertaken as soon as possible after the completion of the works, favoring the use of native species. | Negligible localized residual impact |

| Project elements or activities | Environmental elements | Description of environmental effects | Impact mitigation measures | Significance of residual effects |
|---|---|---|---|---|
| 6. Residual materials and wastewater management | Water and soil/sediment quality, Aquatic resources and Human health | • Introduction of construction and demolition debris<br>• Introduction of contaminants by cleaning residues<br>• Degradation of soil quality | 6.1 Measures 1.17, 1.24, 2.6, 2.7, 3.3, 3.9 à 3,11, 3.14, 4.5, 4.7, 5.10 and 5.22.<br>6.2 Ensure that the residual water and wastewater generated by site installations and operations (e.g. equipment washing water, wall surface cleaning water, residual concrete sawing water) are confined and recovered. Before their release into the environment, these waters shall be sampled and treated (if applicable) in order to comply with the applicable discharge standards, namely the CCME recommendations for water quality - protection of aquatic life, quality criteria of surface water from the MELCCFP (protection of aquatic life - acute effect) and from CMM regulation 2008-47 for suspended solids, pH and C10-C50. It will be the responsibility of the contractor to demonstrate compliance with these standards.<br>6.3 Respect the CCME criterion for the protection of aquatic life, which allows a maximum increase in suspended solids of 25 mg/l (or 8 NTU) compared to the background concentration for a short-term release (less than 24 hours).<br>6.4 If a treatment system (settling tank, filters or other such facilities) is to be used, it shall prevent contaminants and sediments from flowing into sewers and bodies of water. Use the means necessary to define the method of disposal of the captured sediment and residual water.<br>6.5 If the water does not comply with the applicable standards and cannot be treated on site, it shall be collected in watertight containers and transported to a place authorized by the MELCCFP.<br>6.6 Eliminate off-site all non-hazardous residual materials and provide sufficient containers to store household waste on a daily basis.<br>6.7 Implement an adequate management program to ensure the containment and elimination of waste such as metallic debris, used bituminous surfacing and concrete debris. These wastes should be isolated at source as much as possible and recycled.<br>6.8 Do not store hazardous residual materials on site. Dispose of them outside the site in accordance with applicable regulations.<br>6.9 If necessary, regularly maintain portable sanitary facilities and dispose of waste accumulated in an appropriate disposal facility. Portable facilities shall have sufficient capacity and be managed so as to avoid wastes being discharged into the receiving environment.<br>6.10 Do not light fires or burn construction waste or any other object on site. | Negligible localized residual impact |

**APPENDIX 1 – Mitigation measures and residual impacts Table – CLAC-2439**

**END OF SECTION**

**ANNEX 2**

**Environmental Protection Plan**

## PART 1 – GENERAL

### 1.1 Requirements

.1 The specific requirements for the inspection and testing to be carried out by the laboratory appointed by the Engineer are specified in the various sections.

### 1.2 Appointment and payment

.1 The Engineer shall appoint the laboratories that will conduct the testing and shall pay for their services, except in the following cases, when the Contractor shall assume costs of such:

1. Inspection and testing required by laws, ordinances, rules, regulations or instructions to the public;
2. Inspection and testing performed exclusively for the Contractor's convenience;
3. Factory testing and compliance certificates;
4. Tests specified to be carried out by the Contractor under the supervision of the Engineer;

.2 When testing or inspections results, from testing laboratories, reveal a non-compliance of the works with contract requirements, the Contractor shall bear the cost of additional tests that the Engineer may require to verify the acceptability of corrections.

### 1.3 Contractor’s responsibilities

.1 Provide labor and facilities to:

1. Provide access to structures to be inspected and tested;
2. Facilitate inspections and tests;
3. Rehabilitate works disturbed during inspections and testing.
4. Reserve a room in site trailer for the laboratory personnel who will store equipment and process samples.

.2 Notify Engineer a minimum of seventy-two (72) hours in advance of operations to allow for assignment of laboratory personnel and scheduling of tests.

.3 When materials must be tested, send the requested representative sample quantities to the testing laboratory.

.4 Cover the costs for work performed to expose and restore the structures that were covered before inspection or required tests were completed and approved by the Engineer.

**END OF SECTION**

## Part 1 GENERAL

### 1.1 Installation and removal

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

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

.3 Indicate use of supplemental or other staging area.

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

.5 At all times, even outside working hours (evenings, weekends and holidays), the Contractor shall park the machinery and equipment and store the materials in a safe manner to ensure the safety of roadway and bicycle path users within the work and storage areas identified in the sketch in Appendix 1 of section 015526.

.6 The Contractor shall pick up visual markers, freestanding fences, signage panels and posts no later than two (2) days after the end of the work.

### 1.2 Hoisting

.1 Supply and install the hoists and cranes (or similar equipment according to the methodology chosen by the Contractor) necessary for the movement of workers, materials and equipment, and ensure their maintenance and labor. Make the necessary financial arrangements with the subcontractors for the use of the lifting equipment.

.2 Hoists and cranes (or similar equipment according to the methodology chosen by the Contractor) shall be entrusted to qualified operators.

### 1.3 Site storage

.1 Confine work and operations of employees within the areas indicated in the Contract Documents. Do not unreasonably encumber premises with materials and equipment.

### 1.4 Construction site parking

.1 Parking will be permitted on site provided it does not disrupt performance of Work.

.2 Provide and maintain adequate access to project site.

.3 Clean roadways and path areas where used by Contractor's equipment.

**1.5 Equipment, tool and materials storage**

.1 Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.

.2 Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with work activities. Use the storage areas identified in the sketch in Appendix 1 of section 015526.

**1.6 Clean-up**

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

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

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

.4 Stack stored new or salvaged material not in construction facilities. Do not store new materials or recovered materials in site facilities.

**END OF SECTION**

## PART 1 – GENERAL

.1 The Contractor shall manage its activities so that the health and safety of the public and site personnel, and environmental protection always take precedence over issues related to cost and schedule.

### 1.1 Legal and normative references

*(Current editions)*

.1 Canada Labour Code – Part II, Canadian Regulations on Safety and Health at Work.

.2 Canadian Standards Association (CSA).

.3 Safety Code for the Construction Industry, Chapter S-2.1, r.6

### 1.2 Transmission of documents

.1 Transmit the required documents.

.2 At least five (5) days before start of work, transmit the prevention program specific to the construction site, as described in Section 1.7, to the Parks Canada Engineer. The Contractor shall subsequently update its prevention program if the course of the work differs from its initial projections.

.3 Submit duly completed site inspection checklist to the Engineer at the frequency indicated in Article 1.12 of the present section.

.4 Submit all Material Safety Data Sheets (MSDSes) for controlled products used on the work site to the Engineer at least three (3) days prior to their use.

.5 Submit all copies of training certificates that are required for the prevention program's approval, to the Engineer, including:

1. Health and safety on construction sites training;
2. Safety officer certification;
3. Workplace first aid and CPR;
4. Personal protective equipment at work;
5. Any other required training.

Emergency plan

.1 Submit the emergency plan, as described in section 1.7, to the Engineer together with the prevention program.

Work permits

.1 The Contractor shall obtain all required municipal, provincial and federal permits, according to contract requirements. Copies of permit applications and permits shall be sent promptly to the Engineer.

Plans and compliance documents

.1 The Contractor shall submit a copy of all drawings and compliance documents, signed and sealed by an engineer, to the Engineer as required under the Safety Code for the Construction Industry (S-2.1, r .6), any other law, regulation or provision of the specifications or contract. A copy of these documents shall be available at all times on work site.

## 1.3 Identification of hazards related to work methods, equipment and facilities

.1 The Contractor shall conduct a hazard identification relating to each task performed on the work site.

.2 The Contractor shall plan and organize work to favour elimination of hazards at the source or collective protection, thereby minimizing the use of personal protective equipment. Where personal fall protection is required, workers shall use a safety harness in accordance with CAN/CSA-Z259.10 standard. The use of security belts is forbidden. Wearing a life jacket may also be required.

.3 Equipment, tool or means of protection that cannot be installed and used without compromising the health and safety of workers or the public is deemed inadequate for the job.

.4 All mechanical equipment should be inspected before their delivery to the site. Before using any mechanical equipment, the Contractor shall send a certificate of compliance signed by a qualified mechanic to the Engineer. The Engineer may at any time, if he suspects a defect or safety hazard, order the immediate halt of the equipment and require a second inspection by an expert of his choice.

.5 There should not be imposed, on any part of the structure, a load that could damage it. In addition, all construction activities on the bridge shall be approved by the Engineer.

## 1.4 Health and safety meetings

.1 A Contractor’s representative with decision power shall attend all meetings where health and safety issues on the work site are discussed.

.2 The Contractor shall establish a project committee and hold meetings as required by the Safety Code for the Construction Industry.

**1.5 Legal and regulatory requirements**

.1 Comply with all laws, regulations and standards that apply to execution of works.

**1.6 Work site specific conditions related to location**

.1 On this work site, the following special characteristics shall be taken into account:

1. Constant presence of the public (pedestrians, cyclists) around the work site;

2. Lachine Canal Waterway – passage of pleasure boats during the navigational period.

**1.7 Health and safety management**

.1 Accept and assume all duties and obligations normally assigned to the prime contractor under the Safety Code for the Construction Industry (S- 2.1 r.6).

.2 Develop a prevention program specific to the site that is based on risk identification and implement this program from the beginning of the project until the final stage of demobilization. The prevention program should take into consideration the information stipulated in Section 1.6. It shall be sent to all concerned, in accordance with Article 1.2. The prevention program shall include at least the following:

1. Company's health and safety policy;

2. Description, total cost, schedule and projected manpower curve for the works;

3. Organization chart of health and safety related responsibilities;

4. Physical and material organization of the work site;

5. First response and first aid standards;

6. Identification work site related risks;

7. Identification of risks related to tasks performed, including preventive measures and implementation arrangements;

8. Required training;

9. Procedure in the event of accident/injury;

10. Written commitment from all stakeholders indicating they will adhere to this prevention program;

11. Construction site inspection chart based on preventive measures.

.3 Emergency plan:

1. The Contractor shall develop an effective emergency plan in relation to the characteristics and constraints of the site and its environment.

2. The emergency plan shall be sent to all concerned, in accordance with Article 1.2.

3. The emergency plan shall, most notably, contain the following:

.1 Evacuation procedure;
.2 Identification of resources (police, fire department, ambulance, etc.);
.3 Identification of the persons managing the work site;
.4 Identification of rescuers;
.5 Training required for those responsible for its implementation;
.6 Any other information that would be required, given the characteristics of the work site.

**1.8 Responsibilities**

.1 Regardless of the size of the construction site or the number of workers present, the Contractor shall appoint a competent person as health and safety supervisor and manager. Take all necessary measures to ensure the health and safety of people and property at work and in the immediate vicinity of the work site, which could be affected by work progress.

.2 Take all necessary measures to ensure implementation and enforcement of health and safety requirements contained in contractual documents, federal and provincial regulations, applicable standards and work site specific prevention program, and immediately comply with any corrective measure.

.3 Take all necessary measures to keep the site clean and tidy throughout the works.

## 1.9 Communications and postings

.1 Take all necessary steps to ensure effective communication of health and safety information on the work site. Upon arrival at the work site, all workers shall be informed of the prevention program specifics, their obligations and their rights. The Contractor shall insist on workers' right to refuse to perform work if they believe that such work could jeopardize their health, safety, physical integrity or that of other people on the work site. The Contractor shall keep an updated logbook on site with the information provided and signature of all workers who have received this information.

.2 The following information and documents shall be posted in an easily accessible place for workers:

1. Site opening notice;
2. Identification of the prime contractor;
3. Company policy on occupational health and safety;
4. Work site specific prevention program;
5. Emergency plan;
6. Material safety data sheets for all controlled products used on the work site;
7. Construction committee meeting minutes;
8. Names of construction committee representatives;
9. Names of rescuers;
10. Intervention reports and correction measures issued by the CSST.

## 1.10 Unexpected events

.1 When a source of danger not indicated in the specifications or identified during the preliminary work site inspection appears as a result of or during the performance of work, the Contractor shall stop work immediately, implement temporary protective measures for workers and the public, and notify the Engineer verbally and in writing. The Contractor shall then make the necessary changes to the prevention program so work can be safely resumed.

**1.11 Health/safety/hygiene manager**

.1 At the very start of works, appoint a safety officer giving him/her the authority and resources necessary to perform his/her duties.

.2 From the very start of the contract, appoint a competent person whose task is to ensure compliance and enforcement of all health and safety related laws, regulations, standards and contractual requirements.

.3 The person appointed shall specifically:

1. Have a thorough knowledge of the occupational health and safety related laws and regulations applicable to the work site;

2. Develop and disseminate an awareness program for all employees on the work site;

3. Ensure that no worker is allowed on site without taking the awareness program training and meeting the requirements in accordance with the applicable legislation and work site specific prevention program;

4. Inspect the work and ensure compliance with all regulatory requirements as well as those indicated in the contract documents or prevention program;

5. Keep a daily record of his actions and send a copy to the Engineer once a week.

**1.12 Workplace inspections**

.1 Inspect workplaces and complete the construction inspection form at least once a week.

.2 Promptly take all necessary actions to correct derogations from the laws and regulations and hazardous situations that are identified by a government inspector, the Engineer, Health and Safety Coordinator or during periodic inspections.

.3 Send a written confirmation to the Engineer of any measures taken to correct derogations and hazardous situations.

.4 Work shutdown:

1. The security officer or person appointed to take care of health and safety shall order work shutdown and authorize resumption in the event of hazardous situations. This person shall ensure that the health and safety of the

public and work site personnel always take precedence over issues related to cost and schedule.

2. Without limiting the scope of Sections 1.7 and 1.8, the Engineer may at any time order a work shutdown if, in his perception, there is a danger or a risk to the health or safety of work site personnel, the public or a hazard to the environment.

## PART 2 – PRODUCTS

### 2.1 Fall protection

.1 Guardrails:

1. Guardrail installation is mandatory. Parks Canada may indicate some restrictions for anchoring, in which case the Contractor shall ensure that guardrails still comply with all the requirements of Section 3.8 of the Safety Code for the Construction Industry (RSQ, S-2.1, r.6).

2. Guardrails shall remain in place until the end of the project. The Engineer will authorize dismantlement when he can confirm that all work, inspections and required corrections have been made.

.2 Harness:

1. Wearing a safety harness is mandatory during installation of guardrails.

2. Wearing a safety harness is mandatory for all work at heights where collective protection is inadequate.

3. The Contractor shall submit the attachment method and backup cable system in accordance with Section 2.10.12 of the Safety Code for the Construction Industry (RSQ, S-2.1, r.6) for each different sector or work location.

.3 Ladders:

1. All ladders should be of sufficient length to exceed the access landing by at least three (3) rungs;

2. All ladders shall be attached at the top to prevent them from sliding laterally. The Contractor shall implement a system to enable this rule to be followed during the finishing work.

.4 Scaffoldings:

1. Assemble and inspect all scaffolding in accordance with the Safety Code for the Construction Industry (RSQ, S-2.1, r.6).

2. Submit scaffolding plans and compliance documents to the Engineer before start of work.

3. When assembling scaffolding, the Contractor shall ensure that all workers are continuously protected from falling, in accordance with Article 3.9.4.5 of the Safety Code for the Construction Industry (RSQ, S-2.1, r .6).

## 2.2 Material lifting

.1 The Contractor shall submit a mechanical inspection certificate to the Engineer for each hoisting apparatus. Inspection shall have been performed just prior to delivery of equipment to the site.

.2 In addition to the mechanical inspection certificate, all cranes and truck cranes shall keep their annual inspection certificates and logbooks onboard in the cabin.

.3 Lifting equipment shall be positioned so that loads are not transported over the heads of workers, occupants or the public.

.4 The entire lifting area shall be barricaded to prevent any unauthorized person from entering.

.5 The Contractor shall obtain and pay for any permits when it is necessary to temporarily block a public way, to comply with the preceding paragraph, or for any other reason relating to the safety of workers, occupants or the public.

.6 The Contractor shall carefully inspect all slings and lifting accessories and ensure that those that are in poor condition are destroyed and scrapped.

.7 Compressed gas cylinders shall be lifted with a basket specially designed for this purpose.

## 2.3 Fire protection

.1 Work on construction sites shall conform to the Fire Commissioner of Canada CI 301, Standard for Construction Work, June 1982.

**2.4 Materials and waste management**

.1 Lightweight materials and sheet materials should be kept off the pedestrian bridge in containers or firmly attached. Storage of materials on the pedestrian bridge is prohibited.

.2 The preceding paragraph also applies to waste.

.3 Waste shall be removed as it is generated and in appropriate containers.

.4 All waste shall be removed from the pedestrian bridge and the Lachine Canal at the end of each shift.

.5 Except with special permission from the Engineer, place waste dumpsters at least three (3) metres from any structure or building.

**2.5 General work site protection and organization**

.1 Regardless of the circumstances and nature of work, people who access the work site shall wear safety footwear and headgear. The Contractor shall provide chin protection or ratchet suspensions for workers who have to bend over or look down.

.2 Platforms shall be installed in a manner that prevents debris from falling into the Canal.

.3 The work zone on ground level and materials handling area shall be barricaded to prevent occupants and the public from accessing them.

.4 Before installing any equipment or device likely to emit gases or vapours, the Contractor shall obtain authorization from the work site manager. The work site manager will ensure that there is no risk of infiltration into the ventilation systems of surrounding buildings.

.5 The Contractor shall ensure that the work site is kept clean and tidy throughout the works.

.6 Copies of material safety data sheets for all controlled products shall be sent to the Engineer and work site manager before start of work.

.7 The Contractor shall provide sanitary facilities and rest areas compliant with the Safety Code for the Construction Industry.

**END OF SECTION**

## PART 1 – GENERAL

### 1.1 Scope of work – temporary traffic signage

1. The works consist in, without being limited to, supplying and installing the necessary temporary traffic signage for the maintenance of traffic and the protection of workers and of roadway users during the demolition of the Esplanade South-East and Esplanade South-West pedestrian bridges located over the Lachine Canal, in the Ville-Marie borough of the city of Montreal, along with all related works specified in the contract documents.
2. The works addressed in the present document include, without being limited to:
    1. The preparation of all temporary traffic signage plans;
    2. The mobilization, maintenance, upkeep, relocation, replacement, covering/uncovering and demobilization of the temporary traffic signage, in accordance with the requirements set out in the present document;
    3. The upkeep of signage and traffic lanes;
    4. Removal, storage and reinstallation of the permanent signage;
    5. The fabrication, mobilization, installation, maintenance, upkeep, relocation, replacement, covering/uncovering and demobilization of complementary signage panels;
    6. The fabrication, printing, mobilization, installation, maintenance, upkeep, relocation, replacement, covering/uncovering and demobilization of Coroplast information panels;
    7. The provision of roadway Flagmen as needed;
    8. The temporary traffic signage, equipment and labor necessary to complete all aforementioned works;
    9. Any other works required for the full execution of the project in a manner that ensures the safety of roadway users, pedestrians, cyclists, workers, shore residents, as well as any related works necessary for the completion of works stipulated in the present document.

### 1.2 Location

1. The temporary traffic signage works shall be located near the Lachine Canal in Montreal. The work site boundaries for temporary traffic signage works are defined as follows:

    Northern boundary: de la Commune West Street
    Eastern boundary: Mill Street
    Western boundary: Wellington Street
    Southern boundary: Mill Street

2. However, the Contractor may be required to intervene on a larger area when installing the peripheral roadway signage, or during any other works stipulated in the Call for Tenders documents.

### 1.3 References

1. Work zone signalization shall meet the requirements included in the latest editions of the following reference documents at the time of the tender, unless otherwise specified in the present document:

    1. Code de la sécurité routière du Québec ;
    2. Code de sécurité pour les travaux de construction, chapter S-2.1, r. 4 ;
    3. Cahier des charges et devis généraux, infrastructures routières, construction et réparations, Transports Québec – CCDG, hereafter;
    4. Tome III – Ouvrages d'art de la collection Normes – Ouvrages routiers du ministère des Transports – Tome III, hereafter;
    5. Tome V – Traffic Control Devices from the collection Normes – Ouvrages routiers du ministère des Transports – Tome V, hereafter;
    6. Tome VII – Matériaux de la collection Normes – Ouvrages routiers du ministère des Transports – Tome VII.

2. The Contractor shall take note that the Table « Deadlines for Compliance of Traffic Control Devices » indicated in Tome V do not apply to the present contract. The Contractor shall comply with the signage standards in force on the Tender Opening Date.

## PART 2 – WORK SEQUENCE

### 2.1 Description

1. The work on the Esplanade pedestrian bridges of the Lachine Canal is carried out when the bicycle path is completely closed.

    1. Prior to complete closure of the pedestrian bridges, the Contractor shall implement a detour path in accordance with the guidelines stipulated in article 2.3 of the present document.

    2. The Contractor shall clean, and if required clear the snow out of the lanes before reopening them to traffic.

2. Work shall be carried out from work zones set up, on or next to the lanes.

3. The work site and storage area layout is shown in Appendix 1 of the present document. No obstructions are allowed outside the Contractor's authorized work area.

### 2.2 MAINTENANCE OF TRAFFIC DURING WORK

1. Signage necessary for the complete closure of Atwater pedestrian bridges shall comply with plans M-01 and M-02.

2. The Contractor shall also implement free standing fences on the work site around the work area, to physically close the pedestrian bridge undergoing deconstruction from any traffic, to protect users from the excavations and restrict access to the work site. The contractor shall send the Engineer the layout for his work area for approval at least 10 days before the kick-off meeting. The delimitation of the work and storage areas is illustrated in the sketch in appendix 1, while the characteristics of the freestanding fences are detailed in section 015600.

3. Before implementing the closure, the Contractor shall provide requests for closures, according to the provisions of Article 3.1 of the present document.

## 2.3 DETOUR PATH

1. The detour path shall be functional and feature adequate signage throughout the duration of the works. Proposed detour is illustrated on plans M-01 and M-02 of the present contract.

## 2.4 WORK RESTRICTIONS

1. The Contractor shall manage pedestrian and bicycle traffic flow in such a way that users cannot access the Esplanade South-East and Esplanade South-West pedestrian bridges during the execution of the works. The Contractor shall ensure the physical securing of these sections during and outside of the work periods.

# PART 3 – CLOSURE OF THE ESPLANADE SOUTH-EAST AND ESPLANADE SOUTH-WEST PEDESTRIAN BRIDGES

## 3.1 REQUEST FOR CLOSING OF THE BICYCLE PATHS AND TIME FRAMES

1. To carry out the work requiring the closure of the Esplanade South-East and Esplanade South-West pedestrian bridges under the responsibility of Parks Canada, a written request shall be sent to the Engineer at least ten (10) working days before the anticipated closure. The transmitted requests are analyzed and coordinated with others requests or activities before closure is permitted. The Engineer shall accept with or without modifications or refuse the closure requests at least seventy-two (72) hours prior to the anticipated scheduled closure time.

2. If the Contractor wishes to perform an intervention on a network under municipal responsibility, including the implementation of a detour route, he shall obtain a « Permis d'occupation ou d'obstruction temporaire du domaine public » from the relevant authorities, in order to perform the works. The Contractor shall submit a request to the appropriate department at least ten (10) working days before the beginning of each intervention with the help of the form provided on the Ville-Marie borough website.

    1. The Contractor shall submit, along with its permit application, temporary work signage plans and detour plan (if required), for each obstruction that will be implemented. The Contractor is responsible for obtaining the required permits from the relevant authorities.

    2. Prior to the intervention, the Contractor shall submit to the Engineer a copy of all permits acquired. Obtaining the required permits is a prerequisite condition for the authorisation to start the work. In the event that the time frames for providing the work permits are not met, Parks Canada reserves the right to not authorize the start of work covered by this stage. The Contractor shall be responsible for costs associated with such a delay.

    3. Costs relating to closure requests are considered to be general contract costs and payment for such shall be covered by the various items in the maintenance of traffic and temporary signage document.

### 3.2 TRAFFIC OBSTRUCTIONS

1. With the exception of the allocated work and storage areas, the Contractor shall implement whatever measures necessary to ensure that the equipment, materials, facilities, vehicle movement on the work site, along with all works do not obstruct traffic flow or public utilities operations.

## PART 4 – MAINTENANCE OF TRAFFIC AND TEMPORARY TRAFFIC SIGNAGE

1. The purpose of maintenance of traffic is to ensure roadway users and work personnel's safety at all times and to provide good traffic flow.

2. The Contractor is responsible for ensuring traffic flow, in accordance with the requirements set forth in the present document, for the entire duration of the works.

3. The Contractor may, if needed, make proposals in accordance with the "Esprit du contrat" (Spirit of the contract) article of the CCDG by submitting a contract amendment proposal. In such a proposal, the Contractor shall clearly demonstrate the benefits associated with productivity and maintenance of traffic.

## 4.1 TEMPORARY TRAFFIC SIGNAGE PLANS

1. Notwithstanding the transmission format and deadlines, the Contractor shall provide temporary traffic signage plans in accordance with the CCDG Articles 6.6, « Plans fournis par l'Entrepreneur » and 6.6.4, « Plans de signalisation ». Drawings shall include maintenance of traffic plans for each work phase. They shall also include the detour route plans, design plans for the fabrication of detour and complementary signage panels, as well as the drawings required for the pedestrian and cyclist management. Plans shall be faithful to the actual conditions of the site (horizontal and vertical curves) and shall indicate site access locations.

2. Temporary traffic signages plans shall be produced electronically in PDF format, on 279 mm x 432 mm (11" x 17") paper; the deadline for submitting temporary traffic signs plans is ten (10) days before the installation of the temporary signage. These drawings must be signed and sealed by an engineer member of OIQ.

3. Submitting the plans to the Engineer within the prescribed time frame is a prerequisite condition to the authorization to start works. Works undertaken without the Engineer having authorized the use of the plans provided may be refused by the latter. Expenses incurred as a result of such refusal are the responsibility of the Contractor.

4. With the exception of the plan provided with the present Call for Tenders documents, the Contractor is required to produce and supply all other signage plans required for the maintenance of traffic.

## 4.2 SPECIAL REQUIREMENTS PERTAINING TO MAINTENANCE OF TRAFFIC AND TEMPORARY SIGNAGE

1. When road signage components are no longer relevant, the Contractor shall pick them up or make them inoperable immediately, according to the following terms:

    1. Roadwork signage panels and complementary panels not in use shall be removed and picked up or covered, according to one of the options stipulated in Figure 4.44-1, "Sign Covers" in Tome V. A single option shall be applied for the entire work site, and the Contractor shall specify, at the start of the works, which option he has selected.

    2. According to the options in Figure 4.44-1, "Sign Covers" (in Tome V, rigid sign covers shall be black in colour, with the signage company's name on the back (name and phone number). The retroreflective strip must be 80 mm thick and cover the entire width of the panel to cover. The only alternative to covering signage panels is to pick them up completely, including their ballasts.

    3. At the very beginning of the work, the Engineer may authorize the Contractor to install the signage on posts, a maximum of two (2) days before the start of

the work. These panels must be hidden as soon as they are installed. The Contractor is responsible for their maintenance until the end of the work.

## 4.3 SIGNAGE MATERIAL

### 4.3.1 ROADWORK SIGNAGE

1. Roadwork signage are signage panels stipulated in the signage plans presented in Tome V, modified according to the conditions at the work site of the present contract, as well as those included in Appendix B, “Roadwork Signing” of Chapter 4, “Travaux” of Tome V.

2. Roadwork signage shall be fabricated in accordance with the MTQ’s fabrication specifications, available on Transport Québec’s website at www.rsr.transports.gouv.qc.ca.

3. In addition to meeting the requirements of Tome V and Article 4.2 of the present document, all roadwork signage, including complementary panels, and detour signage panels, shall meet the following requirements:

    1. All panels mobilized for more than three (3) consecutive days shall be driven into the ground.

    2. It is strictly forbidden for the Contractor to install its signage panels on existing posts (HQ, lamppost, etc.).

    3. All signage panels shall be located on the outer edges of the shoulder (300 mm of minimum lateral clearance from the asphalt limit) but within 3.5 m, and shall be installed at a free height of 2.2 m from ground level.

4. In addition to meeting the requirements of Tome III, all posts driven into the ground with a lateral signage clearance (roadwork signage or complementary signage) less than that indicated in the chart on page 3 of Chapter 2, “Sécurisation des abords de route” in Tome VIII, shall correspond to those on the HOM 6310-101 program approved list for “Support cédant sous impact – Petite signalisation”.

5. Before driving the posts into the ground, the Contractor shall make whatever verifications necessary to ensure no public utilities or buried structures will be damaged.

6. Panels shall meet the requirements set out in Tome V and Article 4.2 of the present document in regard to their shape, their color and the reflection coefficient of their fluorescent retroreflective film shall not be less than 50%. They shall be clean, in good condition, properly positioned (both during use and when not in use) and in sufficient number.

## 4.4 MAINTENANCE OF SIGNAGE DEVICES

1. When temporary signage devices are in place, regardless of whether or not they are in use, the Contractor shall provide the labour, equipment and materials necessary to regularly clean the equipment (roadwork signage), to ensure they maintain their reflective properties.

2. In addition to regular maintenance as defined above, a maintenance team shall regularly inspect all signage devices on the work site by making rounds once per day, seven (7) days per week. The team shall make appropriate corrections to temporary traffic signage if required. Before beginning its inspection, the maintenance team shall notify the Engineer of its presence. Furthermore, a daily report of each inspection shall be submitted to the Engineer upon conclusion of each round. A copy of the inspection report to be completed by the inspection team shall be submitted to the Contractor at the kick-off meeting.

## 4.5 MAINTENANCE OF TRAFFIC LANES

1. The Contractor is responsible for the maintenance of roadway traffic lanes, including bicycle lanes and pedestrian paths, within the work site boundaries, throughout the entire work period. More specifically, the Contractor is responsible for:

    1. Cleaning areas where traffic is maintained and keeping them free of debris, liquid or solid material, regardless of where this material (sand, earth, gravel, etc.) originated and whether it was brought onto the work site by traffic, the Contractor or inclement weather;

    2. Taking all measures to prevent the deposit of these materials on the roadway and take immediate action to remove them, if necessary;

    3. Maintaining the work zone and traffic lanes so that there are no dust emissions;

    4. Ensuring proper drainage of roadways;

    5. Any other work necessary to good traffic maintenance.

2. The Contractor must be able to respond to spcific requests within four (4) hours following the transmission of a written notice from the Engineer.

## 4.6 EXISTING SIGNAGE

1. Prior to authorization to start works, and in collaboration with the Engineer, the Contractor shall make a detail survey to determine what existing signage must be removed, covered or moved.

2. This survey shall include, for each signage panel, a minimum of a photo of the

panel and a sketch of its location (position, clearance and height). A copy of this survey shall be submitted to the Engineer prior to receiving authorization to start work.

3. By taking possession of the site, the Contractor becomes responsible for the existing roadway signage on the site. The Contractor shall, for the duration of the contract, maintain, upkeep, mask, remove, store, move or adjust any signage on or near the site, if the content of the message is inappropriate

4. At the end of the work, all permanent signage existing before the beginning of the contract, that have been removed, stored, moved, masked or modified are reinstalled according to the requirements of Volume V or restored to their original condition.

## 4.7 PERSONNEL AND EQUIPEMENT ASSIGNED TO SIGNAGE

1. At the kick-off meeting, the Contractor shall submit the list of all employees assigned to and making up its signage crews. The Contractor shall also provide a copy of the certifications proving they have successfully passed the required training. The list of employees and certificates of successful completion of training are prerequisites to authorization to begin work.

2. Roadway flagmen shall have successfully completed AQTR's "Traffic Control person STC-SIR-1" training and hold a valid certification for the entire duration of the works.

3. Each service vehicle must have the following characteristics:

    1. Be a pick-up truck;

    2. Having a total mass under load of 2,700 kg;

    3. Be equipped to comply with the Highway Safety Regulations;

    4. Be equipped with a signaling arrow and a traffic light (beacon);

    5. Have a Type IV retroreflective yellow tape with a minimum width of 75 mm (Standard 14101 of Volume VII) behind the vehicle and on its sides.

# PART 5 – COMPLEMENTARY SIGNAGE

## 5.1 DESCRIPTION

1. After the written notice has been given by the Engineer, the Contractor has forty-eight (48) hours to manufacture and install additional panels.

2. Complementary panels shall be fabricated on plywood (¾" thick) or aluminum panels. Each panel shall be composed as shown in the illustration on the right in Figure 4.20-2, "Combined route marker and Detour sign" in Tome V, or according to the specifications received from the Engineer. T-90 series panels shall not be

reimbursed since they are included in Appendix B, “Roadwork Signing,” of Chapter 4, “Roadwork Signing” in Tome V, and are considered to be roadwork signage panels. Complementary panels shall be covered with type VII orange retroreflective film. Lettering shall be black in color and, where required, the route number decal shall be composed of high-intensity type IV film.

3. At the Engineer’s request, panels may be required to be fabricated on Coroplast if they are intended for installation on top of existing panels.

4. Complementary signage panels are complementary to roadwork signage and may also be regulatory, information or danger signs that the Engineer has requested. They shall meet the Engineer’s requirements as well as those stipulated in Article 4.3.1, « Roadwork signage » of the present document.

5. Complementary panels may be installed on ballasted supports or supports driven into the ground, in accordance with the requirements set out in Article 4.3.1, or the Engineer’s specifications.

6. For each type of installation, the Contractor shall provide a plan that has been signed and sealed by an engineer who is a member of the OIQ, illustrating the panel details, required hardware and installation location.

7. Complementary panels shall remain the Contractor’s property.

8. All complementary panels shall remain available at all times throughout the term of the contract.

## PART 6 – INFORMATION PANNELS ON COROPLAST

### 6.1 DESCRIPTION

1. The Contractor shall manufacture and install coroplast information panels. The following information is required:

    1. A mapping with the user's position on the map. Beware, the position will have to be adjusted according to the location of the panel;

    2. The extent of the work closure, that is, the section of the bicycle path that will be closed;

    3. An overview of the detour to be followed by users;

    4. The Cartesian North;

    5. A legend describing all the elements illustrated on the panel;

    6. The names of the main arteries and roads;

7. The dates of the work (Month Year - Month Year) to inform users of the duration of the obstruction;

8. The panel shall be in color.

2. The panels are of dimensions 1200 mm x 2400 mm.

3. The Contractor shall send a draft of the panel to the Engineer for approval. As soon as approval is obtained, the Contractor is responsible for having the panels printed and installed in accordance with the specifications of article 6.1.

4. The panels shall be installed on plywood (¾" thick) supplied by the Contractor.

5. The panels of 1200 mm X 2400 mm which are on both sides of the pedestrian bridge, they shall be installed on the free-standing fences, according to the specifications of the Engineer. The required hardware is provided by the Contractor. For the others, they shall be installed on the supports planted on the ground, according to the requirements of article 4.3.1 or according to the specifications of the Engineer. The posts are provided by the Contractor.

6. For each type of installation, the Contractor shall provide a plan that has been signed and sealed by an engineer who is a member of the OIQ, illustrating the panel details, required hardware and installation location.

7. The plywood supports, posts and all hardware required to install Coroplast panels shall remain the Contractor's property.

8. The Coroplast panels shall remain Parks Canada's property.

## PART 7 –MOBILE VARIABLE MESSAGES PANNELS

Mobile Variable Message Panels (MVMP) are used to provide information to users at construction site approaches.

At the request of the Engineer and as directed, the Contractor shall provide and install two MVMP (one (1) on each side of the closures) to inform the users of the pedestrian bridge closure. They shall be installed seven (7) days before the closure of the pedestrian bridge.

Following a request from the Engineer, the Contractor has 24 hours to proceed with the implementation of a MVMP.

The Contractor shall replace, repair or reload non-conforming MVMP within four (4) hours of the Engineer's verbal notification.

At the request of the Engineer, the Contractor has a maximum of 24 hours to install and four (4) hours to move MVMP. The Contractor shall proceed with the installation or removal of the MVMP at the locations determined by the Engineer. The installation of the MVMP shall comply with the requirements of sections 4.38 "Variable Message Panel" and 8.16 "Variable Message Panels" of Tome V of the MTQ.

## 7.1 DESCRIPTION AND INSTALLATION

MVMP supplied under this contract shall comply with the requirements of section 8.16 "Variable message signs" of the standards of the Ministère des Transports du Québec (MTQ) and the following requirements:

- be of matrix type (full matrix);
- allow the display of three lines of a minimum of twelve characters of 5 X 7 pixels, 5 X 10 pixels if presence of accent and characters shall not be compressed;
- be provided with a minimum display matrix of 30 X 72 pixels or more;
- allow the display of texts and pictograms;
- be equipped with a cellular communication system and battery charger complying with a National Transportation Communication for ITS Protocol (NTCIP) standard allowing remote modification of messages from the same software for all MVMP provided in this contract.
- be equipped with the GPS option;
- be autonomous with solar and electric energy;

The main controller shall:

- be of industrial type managing the display and all other parts of the system in addition to serving RS 232 interface with the outside;
- carry the application software;
- have a robust controller operating system, which excludes Windows 95, 98 and DOS operating systems;
- serve as a communication link with the control center;
- be responsible for the posted content (approved by the Engineer);
- perform the various diagnoses and return the results to the control center;
- be responsible for capturing the value of the various sensors in the system;
- be able to make decisions based on the values collected by the sensors and probes (eg intensity level of the display from the brightness sensor);
- monitor and report alarms and diagnoses;
- have a power supply (low voltage warning).
- the controllers are equipped with RS 232 external communication ports. These ports are used to communicate with the main control console or locally with a microcomputer. Access to the local communication port is controlled by a password, which can be changed by the main control console as needed. The default password is delivered at the same time as the MVMP;
- the controller shall be able to communicate by wireless cellular link in digital mode (IP address). The operating system shall also have this feature. The phone number, area code, outgoing prefixes, and long distance are user-programmable settings. The necessary modems for the required communications shall be provided for MVMP.

Depending on the type of MVMP provided and its generation, an update of the controller program and an upgrade of the control card or the programming of a communication model ("template") may be required in the software of exploitation. This may also involve the purchase of an additional license from the system.

MVMP shall be functional for the duration of the work. In addition, the Contractor shall make the necessary arrangements to ensure that the voltage across the accumulators of the MVMP is never less than 12.0 volts. To do this, the Contractor is required to identify a person in charge of receiving and managing the MVMP diagnostic reports and being the resource person to the Engineer. The Engineer reserves the right to check this parameter directly or by telemetry. If a MVMP does not respect this parameter, it is considered to be non-compliant.

The Contractor shall program and broadcast the messages to be displayed. Messages shall be approved in advance by the Engineer.

MVMP shall be installed at locations designated by the Engineer. They shall be stable, well oriented to the traffic and allow to display the text horizontally. When installed, MVMP shall not under any circumstances completely or partially hide permanent signage in place or other work signboards.

Prior to installation, the Contractor shall provide the Engineer with the following written information: the MVMP model including its display resolution, manufacturer identification number, NTCIP compatibility proof, number the cell line associated with the SIM card, its IP address and password.

In addition, the Contractor shall meet the following requirements:

- install MVMP outside the works area;
- clean the glass of the MVMP and the solar panel;
- orient the solar panel of the MVMP according to the optimal sunshine, ie south franc with a vertical angle of 46° in summer and 60° during the winter period to facilitate the clearance of snow and ice;
- decrease the luminous intensity by limiting its maximum to 50% during the winter period in order to keep the autonomy of the MVMP in battery mode;
- use, subject to the approval of the Engineer, a power source separate from that of the street lights or the Hydro Québec power grid to connect the MVMP to a 120 VAC source in order to maintain the level of MVMP autonomy in winter. This requires the MVMP to have a 120 VAC battery charger;
- keep MVMP functional for the duration of the work. In addition, the Contractor shall make the necessary arrangements to ensure that the voltage across the accumulators of the MVMP is never less than 120 volts. The Engineer reserves the right to check this parameter.

Under no circumstances should MVMP hide other signs.

When installing and moving any MVMP, the Contractor shall ensure with the Engineer to complies with the following procedures:

- send to the Engineer the list of sites where MVMP will be installed. The list shall be sent to the Engineer at least 48 hours before the planned installation of the

MVMP;

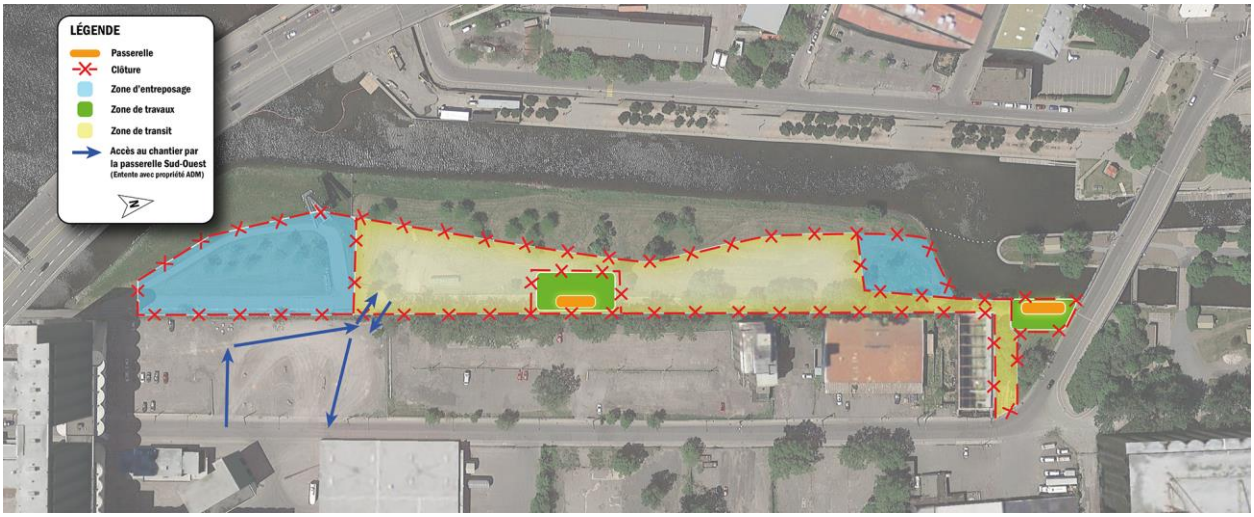
- for each MVMP to be installed, specify:
- the installation site;
- the signaling company providing the MVMP;
- the MVMP identification number;
- the IP address of the MVMP;
- the planned installation date.
- before the first use of each of the MVMP, the Contractor shall test their operation before they leave the supplier's yard;
- during installation, the Contractor shall call the Engineer. Before the trailer is left behind, the Contractor shall send a message to the MVMP and check the battery life;
- the Contractor shall wait for confirmation by the Engineer that the MVMP is installed correctly and at the planned site and that the MVMP is functioning;
- after these steps, the contractor is allowed to leave the installation site upon approval of the Engineer.

The Contractor shall ensure that the MVMP are working well (pixels, display orientation, graffiti to be erased, etc.) at least twice a day.

It is important to designate a contact person so that any problem concerning the MVMP can be dealt quickly with the Engineer.

## APPENDIX 1- Work and storage areas

**Figure 1 - Work and storage areas – Esplanade South-East and South-West Pedestrian Bridges**




**Notes :**

**- Location for illustrative purposes only, the Contractor shall comply with the Parks Canada property.**

**- Access to the construction site of the Esplanade South-West pedestrian bridge passes through ADM's private property. The Contractor shall inquire with Parks Canada about the limits and restrictions associated with this access.**

**- Site access to the Esplanade South-East pedestrian bridge is not illustrated in the figure because it passes through Parks Canada property and is accessible by Mill Street.**

**END OF SECTION**

## Part 1 GENERAL

### 1.1 Installation and removal

.1 Provide, set-up or arrange the temporary access and protection controls necessary in order to allow the execution of the works as soon as possible.

.2 Remove from site all such work when no longer in use.

### 1.2 Freestanding fence

.1 The Contractor shall provide and install sections of freestanding fences to control and protect access to the work site and storage areas. At the end of the work, the Contractor shall recover the sections of fences installed at the site.

.2 The Contractor is responsible for the installation, maintenance, dismantling and, if necessary, replacement of the freestanding fencing sections.

.3 The sections of fences installed shall meet the following requirements:

.1 Sections shall be 1.8 meters high;

.2 Sections shall be 2.4 meters in length;

.3 The sections shall be interconnected in order to represent an effective obstacle to control the movement of pedestrians and cyclists;

.4 The sections shall be freestanding and not require an anchoring system, however if necessary a ballast shall be put in place on the legs for more stability;

.5 The fence shall be open design and not act as a screen, except near demolition areas where there is a risk of projecting objects;

.6 The vertical posts of the fence shall be provided with a reflective strip of 305 mm x 150 mm, applied at a height of 1.2 meters from the ground.

.4 Temporary fences deemed ineffective or non-compliant by the Engineer shall be repositioned or, if necessary, replaced within twenty-four (24) hours following the latter's verbal notice.

### 1.3 Access to site

.1 Entry and exit operations shall be safe and performed to provide complete protection for workers, roadway users, cyclists and pedestrians.

.2 Thus, the Contractor and his subcontractors shall provide for the use of flagmen, at all times, to manage any vehicle or machinery that enters or leaves a work area adjacent to the bicycle path or roadway traffic lanes.

.3 In addition, due to the very busy area, the Contractor shall provide for the use of a flagman, at all times during the work, positioned at the worksite access from Mill Street to the area of the pedestrian bridge work to ensure user safety. This

will also control the interaction between site trips and the emergency exit from the 815 Mill Street building overlooking the bicycle path.

.4 The Contractor shall also provide for the presence of a flagman so that he can escort, at all times, vehicles or machinery traveling on the bicycle path and ensure that all emergency exits from buildings near the bicycle path are clear, including that of 815 Mill Street.

.5 Procedures for access to work areas shall be submitted to the Engineer before the start of work.

.6 It is the responsibility of the Contractor to obtain authorizations from the various public owners in order to operate the work and storage areas illustrated in Appendix 1 of section 015526.

.7 The Contractor shall perform the work without affecting the activities of ADM or those of its subcontractors.

.8 The Contractor shall notify Parks Canada in advance three (3) working days before the start of work, so that Parks Canada can inform the ADM representative, Mr. Domenico Santoianni of the interventions. The Contractor shall also inform Parks Canada of his intentions to leave the premises twelve (12) hours before his departure.

.9 Under no circumstances is traffic allowed outside the access corridor to the worksite on ADM property. Access to the construction site for the South-West pedestrian bridge shall be as shown in Appendix 1 of section 015526 using a minimum number of parking spaces.

.10 Before the start of work, the Contractor shall film the condition of the site and submit a copy of this video to Parks Canada. At the end of the work, the Contractor shall make sure to restore the premises to its original conditions, including the ADM parking lot and the existing fence, by making any repairs required to the satisfaction of the ADM property.

.11 All vehicles entering the work area by one of the site access shall be equipped with a rotating beacon.

.12 All accesses shall be kept closed with construction fences when they are not in use. During the construction period, the accesses can be kept open to facilitate the entry and exit of authorized vehicles. However, the Contractor shall in no case carry out work or store material or equipment in the vincinity of access to the site. In such a case, a flagman shall be present to control the accessibility of the site.

.13 The Contractor shall provide a parking space reserved for the site supervisor. No parking is allowed outside the mobilization area.

**1.4 Public traffic flow**

.1 Provide and maintain competent flagmen, temporary traffic signage, visual markers, safety barriers and flashing luminous signal arrows as required to perform Work and protect public.

**1.5 Fire routes**

.1 Maintain proper access, including overhead clearances, for all types of emergency response vehicles.

**1.6 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.

**END OF SECTION**

## PART 1 – GENERAL

### 1.1 Materials

.1 Unless otherwise indicated, all materials and equipment required to execute the works shall be supplied in new condition and paid for by the Contractor.

.2 A certificate of compliance shall be provided for all materials used for this project. The Contractor shall provide all documents necessary to prove compliance of the materials and processes he supplies. Within three (3) working days of the Engineer's written request, the Contractor shall submit the following information for all materials and products to be used:

1. The name and address of the manufacturer;
2. The trademark, model and catalog number;
3. The performance, description and test results;
4. The manufacturer's instructions on installation or application;
5. The evidence that they will be obtained.

.3 The Contractor shall provide and install materials and equipment of prescribed design and quality, with a performance in line with established standards and for which there are readily available spare parts.

.4 Unless otherwise specified, the Contractor shall use products from a single manufacturer in the case of materials and equipment of the same type or the same class.

.5 All materials resulting from demolition shall be considered waste and become the property of the Contractor, who shall remove and dispose of them off-site at a location approved by the Engineer. The Contractor shall submit a letter of agreement from the land owner where the demolition materials will be disposed of, to the Engineer, prior to starting transport of such.

.6 Waste not considered to be hazardous waste shall be disposed of at sites approved by the *Ministère du Développement Durable, de l'Environnement et Lutte contre les changements climatiques, de la faune et des Parcs* (MDDELCCFP), in accordance with Section IX (dry materials) of the *Regulation respecting the landfilling and incineration of residual materials.*

.7 Conversely, waste considered to be hazardous waste shall be disposed of according to the prescriptions stipulated in the *Regulation respecting hazardous waste.*

**1.2 Manufacturer's instructions**

.1 Unless otherwise indicated, the Contractor shall comply with the latest manufacturer's written instructions concerning the materials and equipment to be used as well as installation methods.

.2 Notify the Engineer in writing of any discrepancy between these specifications and the manufacturer's instructions; the Engineer will determine which document to use.

**1.3 Delivery and storage**

.1 The materials and equipment shall be delivered and stored so as to keep the seal and manufacturer's label intact.

.2 Ensure that materials and equipment are not damaged, soiled or altered during delivery, handling and storage. Any materials and equipment refused are to be transported off site immediately.

.3 Store materials and equipment in accordance with the supplier's instructions.

.4 Resurface any damage to factory-finished surfaces to the Engineer's satisfaction. Use a primer or enamel consistent with the original finish. Do not paint identification plates.

**1.4 Compliance with standards**

.1 If materials or equipment are prescribed under descriptive or performance standards, obtain from the manufacturer, at the Engineer's request, a report of an independent testing laboratory certifying that the materials or equipment meet or exceed the specified requirements.

**1.5 Construction equipment and tools**

.1 Upon request, prove to the Engineer's satisfaction, that the construction equipment and tools are adequate for the manufacture, transport and implementation of a finished product meeting the quality and production rates specified.

.2 Maintain construction equipment and tools in good working condition.

.3 The Contractor shall ensure, throughout the construction period, that its equipment is used and material is stored in compliance with the pedestrian bridge's capacity, as indicated on the drawings.

.4 The Contractor shall also ensure not to leave any equipment or machinery on the pedestrian bridge outside of working hours.

**END OF SECTION**

## PART 1 – GENERAL

### 1.1 General

.1 Perform the cleaning and disposal operations according to local control ordinances and laws against pollution.

.2 Dispose of volatile waste in covered metal containers and remove from site every day.

.3 Ensure proper ventilation of volatile or toxic substances during usage.

### 1.2 Cleaning during construction

.1 Keep the construction site clean and the public properties free of debris and waste.

.2 Remove waste and debris from the site.

### 1.3 Final cleaning

.1 Remove grease, dust, dirt, labels, fingerprints and other foreign material from exposed finished surfaces, including those on the concrete and asphalt surfaces.

.2 Clean work area. Restore the site to its original condition and to the Engineer’s satisfaction.

.3 All costs associated with final cleaning, including site restoration, shall be included in the price for the item entitled, “Mobilization/Demobilization” for which payment terms are stipulated in “Section 012900 – Measurement for payment”.

**END OF SECTION**

## PART 1 – GENERAL

### 1.1 "As-built" drawings

.1 The Engineer shall provide two (2) copies of the contract drawings to include in the project records.

.2 The Contractor shall keep the drawings and faithfully note all deviations from the requirements of the contract documents, the changes imposed by the nature of the site and the changes ordered by the Engineer.

.3 Enter the changes in red.

.4 Record the following information:

1. Changes made to the dimensions and execution details;

2. Changes made following receipt of change orders and orders received on the work site.

.5 Once the work is complete and before the final inspection, the Contractor shall carefully transcribe corrections on the second set of drawings and submit both complete sets to the Engineer.

**END OF SECTION**

## Part 1 GENERAL

### 1.1 SUMMARY

.1 This Section includes requirements for management of construction waste and disposal, which forms the Contractor's commitment to reduce and divert waste materials from landfill and includes the following:

.1 Preparation of a Construction Waste Management Plan that provides guidance on a logical progression of tasks and procedures to be followed in a pollution prevention program to reduce or eliminate the generation of waste, the loss of natural resources, and process emissions through source reduction, reuse, recycling, and reclamation.

.2 Preparation of monthly progress reports indicating cumulative totals representing progress towards achieving diversion and reduction goals of waste materials away from landfill and identifying any special programs, landfill options or alternatives to landfill used during construction.

.3 Preparation of a [Construction Waste Management Report] containing detailed information indicating total waste produced by the project, types of waste material and quantity of each material, and total waste diverted and diversion rates indicated as a percentage of the total waste produced.

.2 This section includes guidelines and recommendations for developing the Contractor's Construction Waste Management Plan.

### 1.2 RELATED REQUIREMENTS

.1 Section 011100 – Summary of works

.2 Section 02 41 16 – Structure Demolition

### 1.3 REFERENCE STANDARDS

.1 American Society for Testing and Materials (ASTM):

.1 ASTM E1609 01, Standard Guide for Development and Implementation of a Pollution Prevention Program

.2 Recycling Certification Institute (RCI):

.1 RCI Certification Construction and Demolition Materials Recycling

### 1.4 DEFINITIONS

.1 Clean Waste: Untreated and unpainted; not contaminated with oils, solvents, sealants or similar materials.

.2 Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction and demolition works.

.3 Hazardous: Exhibiting the characteristics of hazardous substances including properties such as ignitability, corrosiveness, toxicity or reactivity.

.4 Non hazardous: Exhibiting none of the characteristics of hazardous substances, including properties such as ignitability, corrosiveness, toxicity, or reactivity.

.5 Non toxic: Not poisonous to humans either immediately or after a long period of exposure.

.6 Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.

.7 Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.

.8 Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form; recycling does not include burning, incinerating, or thermally destroying waste.

.9 Return: To give back reusable items or unused products to vendors for credit.

.10 Reuse: To reuse a construction waste material in some manner on the project site.

.11 Salvage: To remove a waste material from the project site to another site for resale or reuse by others.

.12 Sediment: Soil and other debris that has been eroded and transported by storm or well production run off water.

.13 Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.

.14 Toxic: Poisonous to humans either immediately or after a long period of exposure.

.15 Trash: Any product or material unable to be reused, returned, recycled, or salvaged.

.16 Volatile Organic Compounds (VOC's): Chemical compounds common in and emitted by many building products over time through outgassing:

.1 Solvents in paints and other coatings;

.2 Wood preservatives; strippers and household cleaners;

.3 Adhesives in particleboard, fiberboard, and some plywood; and foam insulation.

.4 When released, VOC's can contribute to the formation of smog and can cause respiratory tract problems, headaches, eye irritations, nausea, damage to the liver, kidneys, and central nervous system, and possibly cancer.

.17 Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

.18 Construction Waste Management Plan: A project related plan for the collection, transportation, and disposal of the waste generated at the construction site; the purpose of the plan is to ultimately reduce the amount of material being landfilled.

## 1.5 ADMINISTRATIVE REQUIREMENTS

.1 Coordination: Coordinate waste management requirements with all Divisions of the Work for the project and ensure that requirements of the Construction Waste Management Plan are followed.

.2 Pre-work meeting: Before the start of the work covered by the contract, hold a project meeting in which the Owner, the Contractor, the relevant subcontractors and the Engineer will participate in order to discuss the Contractor's Construction Waste Management Plan and to develop mutual understanding of the requirements for a consistent policy towards waste reduction and recycling.

## 1.6 SUBMITTALS

.1 Submit the required documents and samples in accordance with section "013400 - Shop drawings, product description and samples".

.2 Construction Waste Management Plan: Submit the document for this project prior to any waste removal from site and that includes the following information:

.1 Material Streams: Analysis of the proposed jobsite waste being generated, including material types and quantities forming a part of identified material streams in the Construction Waste Management Plan; materials removed from site destined for alternative daily cover at landfill sites and land clearing debris cannot be considered as contributing to waste diversion and will be included as a component of the total waste generated for the site.

.2 Recycling Haulers and Markets: Investigate local haulers and markets for recyclable materials and incorporate into Construction Waste Management Plan.

.3 Alternative Waste Disposal: Prepare a listing of each material proposed to be salvaged, reused, recycled or composted during the course of the project, and the proposed local market for each material.

.4 Landfill Materials: Identify materials that cannot be recycled, reused or composted and provide explanation or justification; energy will be considered as a viable alternative diversion strategy for these materials where facilities.

.5 Landfill Options: The name of the landfill where trash will be disposed of; landfill materials will form a part of the total waste generated by the project.

.6 Materials Handling Procedures: A description of the means by which any recycled waste materials will be protected from contamination, and a description of the means to be employed in

recycling the above materials consistent with requirements for acceptance by designated facilities.

.7 Transportation: A description of the means of transportation of the recyclable materials, whether materials will be site separated and self hauled to designated centers, or whether mixed materials will be collected by a waste hauler and removed from the site, and destination of materials.

## 1.7 QUALITY ASSURANCE

.1 Resources for Development of Construction Waste Management Plan: The following sources may be useful in developing the Construction Waste Management Plan:

.1 Recycling Haulers and Markets: Investigate local haulers and markets for recyclable materials and incorporate into the Construction Waste Management Plan.

.2 Certifications: Provide proof of the following during the course of the Work:

.1 Compliance Certification: Provide proof that recycling center is third party verified and is listed as a Certified Facility through the registration and certification requirements of the Recycling Certification Institute.

## 1.8 DELIVERY, STORAGE AND HANDLING

.1 Storage Requirements: Implement a recycling/reuse program that includes separate collection of waste materials as appropriate to the project waste and the available recycling and reuse programs in the project area.

.2 Handling Requirements: Clean materials that are contaminated before placing in collection containers and ensure that waste destined for landfill does not get mixed in with recycled materials:

.1 Deliver materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to recycling process.

.2 Arrange for collection by or delivery to the appropriate recycling or reuse facility.

.3 Hazardous Waste and Hazardous Materials: Handle in accordance with applicable regulations.

# Part 2 PRODUCTS

## 2.1 NOT USED

.1 Not Used.

## Part 3 EXECUTION

### 3.1 CONSTRUCTION WASTE MANAGEMENT PLAN IMPLEMENTATION

.1 Manager: The Contractor is responsible for designating an on-site party or parties responsible for instructing workers and overseeing and documenting results of the Construction Waste Management Plan for the project.

.2 Distribution: Distribute copies of the Construction Waste Management Plan to the job site foreman, each Subcontractor, the Owner, the Engineer and other site personnel as required to maintain.

.3 Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, composting and return methods being used for the project to Subcontractors at appropriate stages of the project.

.4 Separation Facilities: Lay out and label a specific area to facilitate separation of materials for potential recycling, salvage, reuse, composting and return:

.1 Recycling and waste bin areas are to be kept neat and clean and clearly marked in order to avoid contamination of materials.

.2 Hazardous wastes shall be separated, stored, and disposed of in accordance with local regulations.

### 3.2 SUBCONTRACTOR'S RESPONSIBILITY

.1 The Subcontractors shall cooperate fully with the Contractor to implement the Construction Waste Management Plan.

### 3.3 SAMPLE CONSTRUCTION WASTE MANAGEMENT FORMS

.1 Sample waste tracking form below can be used by the Contractor to establish their own forms for recording management of construction waste:

| Material Stream | Diverted Waste by Report Date | Sept | Oct | Nov | Dec | Total | Units |
|---|---|---|---|---|---|---|---|
| Material Streams Contributing to Credit | Plastic | 1.25 | 2.5 | 10 | 5 | 18.75 | $m^3$ |
| Carpet | | 2.5 | 2.5 | 2.5 | 0 | 7.5 | $m^3$ |
| Paper/Cardboard | | 5 | 2.5 | 2.5 | 5 | 15 | $m^3$ |
| Clean Wood | | 0 | 25 | 0 | 1.25 | 26.25 | $m^3$ |
| Metal | | 1.25 | 2.5 | 5.5 | 7 | 16.25 | $m^3$ |
| Gypsum Board | | 2.5 | 2.5 | 4 | 5 | 14 | $m^3$ |
| Brick/Concrete | | 10.5 | 2.5 | 5.5 | 8.75 | 27.25 | $m^3$ |
| Asphalt Shingles | | 10 | 0 | 0 | 0 | 10 | $m^3$ |
| | | | | | Total Diverted Waste | 135 | $m^3$ |
| Material Streams not Contributing to Credit | Landfill | 10.75 | 7.5 | 15 | 10 | 43.25 | $m^3$ |
| Screen Fines (ADC) | | 5 | 1.25 | 0 | 2.5 | 8.75 | $m^3$ |
| 150 mm Minus (ADC | | 1.25 | 1.25 | 5 | 5.5 | 13 | $m^3$ |
| | | | | | Total Landfill/ADC Waste | 65 | $m^3$ |
| | | | | | Total Waste | 200 | $m^3$ |
| | | | | | Percent Diverted | 67.5 | % |

**END OF SECTION**

# TECHNICAL SPECIFICATIONS

## Part 1 GENERAL

### 1.1 Summary

.1 This Section includes the following:

.1 Demolition and removal of site improvements adjacent to a structure being demolished.

.2 Demolition and removal of concrete foundations.

.3 Abandoning in place below grade construction.

### 1.2 Related requirements

.1 Section 011100 – Summary of works

.2 Section 017419 – Waste management and disposal

.3 Section 310000.01– Earthwork

.4 Section 012900 – Measurement for payment

.5 Tender form

.6 The drawings contain construction details which serve as a guide to the main demolition and removal requirements for this project; the representative of the Contractor shall further detail the execution details in a demolition plan prepared by an engineer.

### 1.3 Reference standards

.1 Canadian Council of Ministers of the Environment (CCME)

.1 PN 1327-2003, Environmental Code of Practice for aboveground and underground tank systems containing petroleum products and allied petroleum products.

.2 CSA Group (CSA)

.1 CSA S350-M1980 (R2003), Code of Practice for Safety in Demolition of Structures.

### 1.4 Definitions

.1 Demolition: rapid destruction of a structure following removal of Hazardous Substances.

.2 Hazardous Substances: dangerous substances, dangerous goods, hazardous commodities and hazardous products, may include but not limited to: asbestos PCB's, CFC's, HCFC's, poisons, corrosive agents, flammable substances, ammunition, explosives, radioactive substances, or other material that can endanger human health or wellbeing or environment if handled improperly as

defined by the Federal Hazardous Products Act (RSC 1985) including latest amendments.

.3 Waste Management Coordinator (WMC): Contractor representative responsible for supervising waste management activities as well as coordinating related, required submittal and reporting requirements.

.4 Construction Waste Management Plan (CWM Plan): Written plan addressing opportunities for reduction, reuse, or recycling of materials prepared in accordance with Section 017419 - Construction Waste Management and Disposal.

.5 Construction Waste Management Report (CWM Report): Written report identifying actual materials that formed CWM Plan for reduction, reuse, or recycling of materials prepared in accordance with Section 017419- Construction Waste Management and Disposal.

## 1.5 Action and informational submittals

.1 Action Submittals: Provide the following submittals before starting any work of this Section:

.1 Shop Drawings: Shop Drawings: Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Quebec, Canada as follows:

.2 Submit required documents and samples in accordance with Section 013400 – Shop Drawings, Product and Sample Descriptions.

.2 Informational Submittals: Provide the following submittals when requested by the Consultant:

.1 Qualification Data: Submit information for companies and personnel indicating their capabilities and experience to perform work of this section including; but not limited to, lists of completed projects with project names and addresses, for work of similar complexity and extent.

.3 Sustainable Design Submittals:

.1 Erosion and Sedimentation Control: submit erosion and sedimentation control plan in accordance with authorities having jurisdiction.

.2 Construction Waste Management: Submit project CWM Plan highlighting recycling and salvage requirements in accordance with Section 017419 - Construction Waste Management and Disposal.

## 1.6 Delivery, storage and handling

.1 Waste Management and Disposal: Separate waste materials for recycling/reuse in accordance with Section 017419 - Waste Management and Disposal.

## 1.7 Quality assurance

.1 Regulatory Requirements: Ensure Work is performed in compliance with CEPA.

.1 Comply with hauling and disposal regulations of Authority Having Jurisdiction.

.2 Standards: Comply with ANSI A10.6 and NFPA 241

.2 Regulatory Requirements: Perform work of this Section in accordance with the following:

.1 Provincial/Territorial Occupational Health and Safety Standards and Programs.

**1.8 Existing conditions**

.1 Review designated substance report and take precautions to protect environment.

.2 Should material resembling spray or trowel-applied asbestos, or other designated substance listed as hazardous be encountered, stop work, take preventative measures, and notify the Engineer immediately.

.1 Do not proceed until written instructions have been received from the Engineer.

.3 Notify the Engineer before disrupting access or services.

## Part 2 PRODUCTS

**2.1 Equipment**

.1 Leave equipment and machinery running only while in use, except where extreme temperatures prohibit shutting down.

.2 Demonstrate that tools and machinery are being used in manner which allows for salvage of materials in best condition possible.

**2.2 Temporary support structures**

.1 Design temporary support structures required for demolition work and underpinning and other foundation supports, if necessary, for the project using a qualified professional engineer registered or licensed in Province of the Work.

**2.3 Soil materials**

.1 Satisfactory Soils: Provide soil in accordance with "Section 310000.01 Earthworks".

## Part 3 EXECUTION

### 3.1 Examination

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

.2 Review Project Record Documents of existing construction provided by the Engineer.

.3 The Engineer does not guaranty that existing conditions are the same as those indicated in Project Record Documents.

### 3.2 Preparation

.1 Do Work in accordance with Section "015450 - Safety Measures".

.2 Protection:

.1 Work in accordance with Section "013543 - Environmental Procedures".

.2 Prevent movement, settlement, or damage to adjacent structures, public utilities and adjacent structures to remain in place. Provide bracing and shoring required.

.3 Keep noise, dust, and inconvenience to occupants to minimum.

.4 Provide temporary dust screens, covers, railings, supports and other protection as required.

.3 Locate and protect public utilities.

### 3.3 Demolition salvage and disposal

.1 Dismantle elements of pedestrian bridges and approaches as indicated on plans Sort materials and group them in separate piles according to whether they will be recycled and/or reused.

.2 Unless otherwise specified, dispose of materials removed to reuse companies and appropriate recycling facilities in accordance with the requirements of the competent authorities.

### 3.4 Stockpiling

.1 Identify the different stockpiles, indicating material type and quantity.

.2 Designate appropriate security resources/measures to prevent vandalism, damage and theft.

.3 Stockpile materials intended for ecological disposal in a place which, on the one hand, will facilitate their evacuation from the site and their examination by potential users interested in their reuse, and who, on the other hand, will not interfere with their dismantling, processing or transportation by truck.

**3.5 Removal from site**

.1 Transport materials intended for ecological disposal to approved waste management centers, indicated in the waste reduction plan, in accordance with the relevant regulations. It is prohibited to transport materials elsewhere than to waste management centers appearing in the waste reduction plan without having obtained the written authorization of the Engineer.

.2 Dispose of other materials in accordance with the relevant regulations, in approved facilities and indicated in the waste reduction plan. It is prohibited to transport the materials elsewhere than to the facilities listed in the waste reduction plan without having obtained the written authorization of the Engineer.

**3.6 Site restoration**

.1 Below Grade Areas: Completely backfill the areas below ground level and the depressions caused by the demolition according to the specifications on the plans. Use satisfactory backfill material in accordance with the backfill requirements in section "310000.01 - Earthworks".

.2 Provide a smooth transition between adjacent existing grades and new grades.

**3.7 Repairs**

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

.2 Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.

**3.8 Cleaning and restoration**

.1 Keep site clean and organized throughout demolition procedure.

.2 Once the work is completed, restore site to its original condition, a condition corresponding to that of the adjacent undisturbed surfaces as indicated on the plans which were affected by the work.

**END OF SECTION**

## PART 1 – GENERAL

### 1.1 Related sections

.1 Section 013400 – Shop drawings, product and sample descriptions

.2 Section 031000 – Formwork for concrete, work platforms and accessories

.3 Section 032000 – Concrete reinforcement

### 1.2 Measurement for payment

.1 The costs related to the supply and placement of cast-in-place concrete for the concrete bases of the posts, are included in the prices of the item entitled "Installation of the fences with steel posts and chain links (including the concrete bases for the posts and anchor plates" whose terms of payment are described in section" 012900 - Measurement for Payment".

### 1.3 References

*(Current editions)*

**Abbreviations and acronyms**

.1 Portland cement: hydraulic cement or hydraulic cement compound (where “b” suffix indicates that this is a composite product).

1. Type GU, GUb or GUL: General use cement.
2. Type MS or MSb: Moderate sulphate-resistant cement.
3. Type MH, MHb or MHL: Moderate heat of hydration cement.
4. Type HE, HEb or HEL: High early-strength cement.
5. Type LH, LHb or LHL: Low heat of hydration cement.
6. Type HS or HSb: High sulphate-resistant cement.

.2 Fly ash:

1. Type F: Calcium oxide content less than 15%.
2. Type CI: Calcium oxide content ranging from 15 to 20%.
3. Type CH: Calcium oxide content greater than 20%.
4. Type S: Granulated-blast furnace slag.

.3 American Society for Testing and Materials (ASTM)

1. ASTM C109/C109M, Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2 in. or 50 mm Cube Specimens).

2. ASTM C 260/C 260M, Standard Specification for Air-Entraining Admixtures for Concrete.

3. ASTM C 309, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.

4. ASTM C332, Specification for Lightweight Aggregates for Insulating Concrete.

5. ASTM C 494/C 494M, Standard Specification for Chemical Admixtures for Concrete.

6. ASTM C827, Test Method for Change in Height at Early Ages of Cylindrical Specimens from Cementitious Mixtures.

7. ASTM C939, Test Method for Flow of Grout for Preplaced-Aggregate Concrete.

8. ASTM C 1017/C 1017M, Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.

9. ASTM D 412, Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension.

10. ASTM D 624, Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomer.

11. ASTM D 1751, Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types).

12. ASTM D 1752, Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction.

.4 Canadian Standards Association (CSA)

1. CAN/CSA-A5, Portland Cements.
2. CSA A23.1/A23.2, Concrete Materials and Construction / Test methods and standard practices for concrete.
3. CAN/CSA-A23.2, Test for Concrete.
4. CAN/CSA-A23.5, Supplementary Cementing Materials.
5. CSA A283 Qualification Code for Concrete Testing Laboratories.
6. CAN/CSA-A363, hydraulic slag cement.
7. CSA A3000, Compendium binder materials (Contains A3001, A3002, A3003, A3004 and A3005).

.5 Ministère des transports et de la mobilité durable (MTMD)

1. Cahier des Charges et Devis Généraux (CCDG).
2. Bétons de masse volumique normale (Norme 3101).

**1.4 Samples**

.1 Submit required samples as stipulated in Section 013400 – Shop drawings, product descriptions and samples, at least five (5) days before the beginning of concrete work.

.2 At least one (1) week prior to starting work, notify the Engineer of the proposed supply source for aggregates, and allow him to have access for sampling.

**1.5 Certificates**

.1 Submit the required certificates as specified in Section 013400 – Shop drawings, product descriptions and samples.

.2 The Engineer may require the Contractor to submit samples of the admixtures he intends to use.

.3 At least one (1) week prior to starting concrete work, submit copies of the test reports to the Engineer relating to tests performed by the manufacturer, along with a certificate issued by an independent and qualified testing and inspection laboratory, certifying that the materials listed below meet specified requirements:

1. Portland cement;

2. Hydraulic cement compound;
3. Supplementary cementing materials
4. Admixtures
5. Aggregates
6. Water

.4 Provide a certificate attesting that the selected mix formula will produce concrete of the quality, durability and performance prescribed, and complies with CAN/CSA-A23.1 standard requirements. In case of any divergence or discrepancy from the concrete mix design or dosage parameters, obtain written permission from the Engineer before continuing work.

.5 Provide proof that the concrete plant, equipment and materials use to produce the concrete meet the CAN/CSA-A23.1 standard requirements.

**1.6 Quality assurance**

.1 Submit a valid and recognized certificate issued by the plant supplying the concrete, to the Engineer at least five (5) days prior to start of concrete work.

.2 Provide the technical data sheets for the curing materials to the Engineer.

.3 At least one (1) week prior to starting of concrete work, submit the proposed quality control methods to the Engineer for approval, for the following tasks:

1. Curing;
2. Finishing;
3. Formwork removal.

**1.7 Delivery, storage and handling**

.1 Delivery and acceptance requirements:

1. Transit time

.1 Deliver concrete to construction site and discharge within no more than 120 minutes after batching.

.2 If applicable, written approval from the Engineer and concrete producer is required for any changes

to the maximum transit time, as indicated in the CSA A23.1/A23.2 standard.

.3 Submit time differences to the Engineer for review.

2. Delivery of concrete

.1 Ensure the continuous concrete delivery from the plant meets the CSA A23.1/A23.2 standard requirements.

**1.8 Waste management and disposal**

.1 Sort and recycle waste materials as prescribed in Section 013543 – "Environmental protection", and according to the requirements of the waste reduction plan.

.2 Provide trigger sprayers to connect to water hoses.

.3 Designate a cleaning area to limit the consumption of clean water and the volume of surface runoff.

.4 Carefully coordinate the prescribed concrete work according to weather conditions.

.5 Ensure emptied containers are sealed and stored safely prior to their disposal, out of the reach of children.

.6 Take the necessary precautions to prevent plasticizers, water reducers or air entraining agents used in concrete from contaminating rivers and sources of drinking water. If applicable, collect the liquid or solidify with an inert non-combustible material, taking all appropriate safety measures. Dispose of all wastes in accordance with applicable local, provincial and national regulation requirements.

.7 Choose the least damaging method of cleaning that will produce the best possible results.

## PART 2 – PRODUCTS

### 2.1 Materials

.1 Cement and supplementary cementing materials

1. Hydraulic cements shall be in accordance with the CAN/CSA A23.1 and CAN/CSA A3000 standards.

2. Use GUb-SF, GUb-S/SF or GUb-F/SF type blended hydraulic cement binder.

3. Total mass of supplementary cementing materials (fly ash, finely ground granulated blast furnace slag and silica fumes) shall not exceed 30% of the total cementitious material mass.

4. Silica fumes shall be in accordance with the CAN/CSA A3000, type U standard.

5. When required, fly ash shall be in accordance with the CAN/CSA A3000, type F standard requirements, and more specifically, the section in standard A3001 – Cementitious Materials for Use in Concrete.

.2 Water

1. Water used to mix and cure concrete shall be fresh, clean, potable water, free of oil and chemical or organic impurities, and in compliance with provisions set forth in section 4 of the CAN/CSA A23.1 standard.

.3 Aggregates

1. All aggregates shall be clean, durable, free of deleterious materials and meet requirements set forth in the CAN/CSA A23.1 standard that apply to the appropriate exposure class.

.4 Admixtures

1. Air entraining admixtures

.1 Air entraining admixtures shall be in accordance with the ASTM C260 standard.

2. Chemical admixtures

.1 Chemical admixtures shall be in accordance with the ASTM C494/C494M or ASTM C1017/C1017M standards.

.2 The Engineer shall approve the accelerators or retarders used for the concrete setting in cold weather or hot weather.

.5 Curing products

1. Compounds used to cure concrete shall meet the following requirements: CSA A23.1/A23.2, ASTM C171, ASTM C309 and AASHTO M182 standards.

### 2.2 Mix design

The characteristics and concrete mix to be used in this project are defined in the following table.

| Type | Strength at 28 days (MPa) | Minimum binder weight ($kg/m^3$) | Type of binder(1) | Max. water/binder ratio or interval | Slump (mm) ± 30 | Large aggregates (mm) | Air content (%) (2) | Max. chloride ion permeability (Coulombs) |
|---|---|---|---|---|---|---|---|---|
| I | 30 | 340 | GU, GUL, MS, MH, HE, GUb-S | 0,45 | 80 | 5-20 | 5-8 | - |

(1) The GUb-SF type binder shall contain at least 8% silica fumes.

The GUb-F/SF and GUb-S/SF type binders shall contain at least 5% silica fume and at least 15% fly ash or slag. The total mass of supplementary cementitious materials (fly ash, silica fumes and slag) shall not exceed 30% of the total cementitious material mass.

(2) The air content shall be according to the specifications stipulated in the table, regardless of whether or not superplasticizer has been added.

(3) At the pump outlet, the spacing factor shall be less than or equal to 230 µm.

## PART 3 – EXECUTION

### 3.1 Preparation

.1 Obtain the Engineer's authorization before pouring concrete; notify him twenty-four (24) hours in advance of the execution of this work. Provide the Engineer, at least ten (10) working days before the concrete work, the method of placement of concrete.

.2 Before pouring the concrete, obtain the Engineer's authorization for the proposed method to protect concrete during pouring and curing in bad weather.

.3 Follow the instructions below during the concrete work:

1. Development of cold joints are not allowed.

2. Ensure concrete delivery and handling facilitates placement with a minimum of re-handling, and without damage to the existing structures or work.

.4 Protect the existing structures from getting dirty.

.5 The concrete may only be pumped once the equipment and the mix design have been approved.

.6 Ensure the reinforcement and embedded elements are not displaced during the concrete placement.

.7 Clean the concrete surfaces and remove stains before applying the finishing products.

.8 Before pouring the concrete, obtain the Engineer's authorization for the proposed method to protect concrete during placement and curing.

.9 Keep a record of the concrete work, accurately indicating the date and location of each concrete pour, the characteristics of the concrete, the ambient temperature and the samples taken.

.10 In locations where new concrete is bonded to an existing structure, drill holes in the existing concrete, insert steel studs made of high-adhesion steel rebar and secure well with epoxy grout to anchor and hold them in the indicated positions.

.11 Keep the new concrete components free of loads until the Engineer has authorized such.

.12 Maximum temperature of cast-in-place concrete during curing period shall not exceed 70 °C.

### 3.2 Placement

.1 Proceed with cast-in-place concrete structure work in accordance with the CAN/CSA-A23.1 standard.

.2 Pumped concrete to be placed in accordance with requirements set out in the ACI 304.2R standard.

.3 Finish: Finish concrete surfaces in accordance with the CAN/CSA-A23.1 standard.

### 3.3 Sleeves and embedded elements

.1 After obtaining the Engineer's authorization, arrange openings and place sleeves, fasteners, hangers, angles and cover plate accessories, as well as other items to be embedded in concrete, as indicated on the drawings or specified elsewhere.

.2 Sleeves and openings greater than 100 mm x 100 mm that are not indicated shall be reviewed by the Engineer.

.3 Do not eliminate or relocate reinforcement to accommodate hardware. If the elements to be embedded in the concrete cannot be placed at indicated locations, obtain the written authorization from the Engineer for any changes before pouring the concrete.

.4 Confirm the location and dimensions of the sleeves and openings shown in the drawings.

.5 Install special elements to be embedded in concrete according to indications and requirements of the methods used for non-destructive concrete testing.

### 3.4 Curing and finishing

.1 Finish concrete surfaces in accordance with the CSA A23.1/A23.2 standard.

.2 To remove excess bleed water, use methods revised to the Engineer's satisfaction. Ensure surface is not damaged.

.3 For formed concrete surfaces, remove formwork tie rods and other metal parts or cut back to at least 40 mm from the concrete surface.

.4 Holes left by tie rods, indentations and cavities shall be deep enough and have relatively perpendicular edges to hold the skim mortar compound.

.5 It is prohibited to use water or other products to facilitate the concrete finishing.

.6 Saturate indentations and cavities with water and repair by brushing patch area with a pure cement paste and fill with mortar composed of the same sand and cement as that used in the concrete.

.7 Keep surfaces wet for a period of three (3) consecutive hours before filling with concrete or mortar.

.8 Firmly press or compact mortar into the cavity to completely fill; finish to the same texture as the adjacent surface.

.9 Use curing compounds compatible with finishing product applied to the concrete surfaces. Provide written declaration that compounds used are compatible.

**3.5 Tolerances**

.1 Tolerance of concrete surface finishing shall comply with the straight edge method in accordance with the CAN/CSA-A23.1 standard.

**3.6 Field quality control**

.1 The inspection and testing of the concrete and concrete materials will be carried out by a testing laboratory designated by the Engineer, in accordance with the CAN/CSA-A23.1 standard.

.2 The Engineer will pay for testing.

.3 The Engineer will take additional test cylinders during cold weather concreting. These samples shall be cured at the work site, under the same conditions as the concrete batches from which they were taken.

.4 The non-destructive concrete testing shall be performed according to the methods described in the CAN/CSA-A23.2 standard.

.5 The inspection and testing done by the Consultant shall not replace or supplement the quality control performed by the Contractor, nor do they relieve the latter of its contractual responsibilities in this regard.

**END OF SECTION**

## Part 1 GENERAL

### 1.1 Related requirements

.1 Section “011100 – Summary of Works”.

.2 Section “012900 – Measurement for Payment”.

.3 Section “013400 – Shop Drawings, Product and Sample Descriptions”.

.4 Section “013513.43 – Special Project Procedures for Contaminated Sites”

.5 Section “013543 – Environmental Protection”.

.6 Section “014100 – Testing Laboratories”.

.7 Section “017100 – Cleaning”.

.8 Section “024116.09 – Structure Demolition”.

.9 Section “312333.01 – Excavating, Trenching and Backfilling”.

.10 Section “32116.01 – Granular Sub-base”.

.11 Section “329119.13 – Topsoil Placement and Grading”.

.12 Section “328223 – Sodding”.

.13 Tender Form.

### 1.2 Reference standards

.1 ASTM International

.1 ASTM D698-07e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400ft-lbf/ft$^3$) (600kN-m/m$^3$).

.2 CSA Group (CSA)

.1 CSA A23.1/A23.2-F14, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.

.2 CSA A3000-F18, Cementitious Materials Compendium.

.3 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.

### 1.3 Administrative requirements

.1 Co-ordination: arrange with authority having jurisdiction for relocation of buried services that interfere with execution of work.

.1 Pay costs of relocating services.

### 1.4 Action and informational submittals

.1 Submit in accordance with Section “013400 - Shop Drawings, Product and Sample Descriptions”.

.2 Samples: submit to designated testing agency, 23 kg sample of backfill or fill material proposed for use, no later than one (1) week before backfilling or filling work.

.3 Site Quality Control Submittals: submit in accordance with Section “014100 - Testing Laboratories”.

.1 Submit condition survey of existing conditions as described in EXISTING CONDITIONS article.

.2 Submit testing results as described in PART 3 - FIELD QUALITY CONTROL.

.4 Sustainable Design Submittals:

.1 Erosion and Sedimentation Control: submit erosion and sedimentation control plan in accordance with authorities having jurisdiction.

.2 Construction Waste Management:

.1 Submit Construction Waste Management Plan, established for the project, highlighting recycling and recovery requirements.

.2 Submit calculations on end-of-project recycling rates, salvage rates, and landfill rates which shall demonstrating that 75 % of construction wastes were recycled or salvaged.

## Part 2 PRODUCTS

### 2.1 Materials

.1 MG-112 type crushed granular material shall comply with article 12.2 of the CCDG.

.2 MG-20 type crushed granular material shall comply with article 12.3 of the CCDG.

## Part 3 EXECUTION

### 3.1 Examination

.1 Evaluation and Assessment:

.1 Before commencing work establish the locations of buried public utility services on and adjacent to site.

## 3.2 Preparation

.1 Temporary erosion and sedimentation control:

.1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.

.2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

.3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

.2 Protection of in-place conditions:

.1 Protect excavations from freezing.

.2 Keep excavations clean, free of standing water, and loose soil.

.3 Where soil is subject to significant volume change due to change in moisture content, cover and protect to the Engineer’s approval.

.4 Protect natural and man-made features required to remain undisturbed. Unless otherwise indicated or located in an area to be occupied by new construction, protect existing trees from damage.

.5 Protect buried public utility services that are required to remain undisturbed.

## 3.3 Excavation

.1 Shore and brace excavations, protect slopes and banks and perform work in accordance with the most stringent Provincial regulations.

.2 Strip topsoil over areas to be covered by new construction, over areas where grade changes are required, and so that excavated material may be stockpiled without covering topsoil.

.1 Stockpile topsoil on site for later use.

.3 Excavate as required to carry out work.

.1 Do not disturb soil or rock below bearing surfaces.

.2 Notify the Engineer when excavations are complete.

.3 If soil bearing capacity is unsatisfactory, additional excavation will be authorized in writing and paid for as additional work.

.4 Excavation taken below depths shown without the Engineer’s written authorization shall be filled with granular class B borrowing material at Contractor's expense.

### 3.4 Field quality control

.1 Testing of materials and compaction of backfill and fill will be carried out by testing laboratory designated by the Engineer.

.2 Not later than one (1) week minimum before backfilling or filling, submit to designated testing agency, samples of backfill as described in article ACTION AND INFORMATIONAL SUBMITTALS.

.3 Do not begin backfilling or filling operations until material has been approved for use by the Engineer.

.4 Not later than 48 hours before backfilling or filling with approved material, notify the Engineer to allow compaction tests to be carried out by designated testing agency.

### 3.5 Backfilling

.1 Remove snow, ice, construction debris, organic soil and standing water from spaces to be filled.

.2 Lateral support: maintain even levels of backfill around structures as work progresses, to equalize earth pressures.

.3 Compaction of subgrade: compact existing subgrade under the bicycle path until the density prescribed for the filling materials is obtained.

.1 Backfill the excavated areas with granular class B borrowing material, compacted until the density prescribed for the filling materials is obtained.

.4 Placing:

.1 Place backfill material, infill material and base layer granular foundation material in 300 mm thick layers. Add the required amount of water to obtain the prescribed density.

.5 Compaction: compact each layer of material to following densities for material to ASTM D698 standard:

.1 To underside of base courses: 95%.

.2 Base courses: 90%.

.3 Elsewhere: 90%.

.6 Under seeded and sodded areas: use backfill up to the level of topsoil.

.7 Foundations: use MG-20 on a thickness of 200 mm.

### 3.6 Grading

.1 Grade so that water will drain away from buildings, under the Mill Street bridge and existing walls, but rather is directed towards the Lachine Canal and other approved drainage works by the Engineer.

.1 Grade to be gradual between finished spot elevations shown on drawings.

## 3.7 Cleaning

.1 Progress Cleaning: clean in accordance with Section “017411 - Cleaning”.

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

.2 Dispose of cleared and grubbed material off site daily.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section “017411 - Cleaning”.

.3 Waste management: sort waste in order to separate organic matter and recycling material, in accordance with section “017419 - Waste management and disposal”.

**END OF SECTION**

## PART 1 – GENERAL

### 1.1 Related requirements

.1 Section 013543 – Environmental protection

.2 Section 013514-43 – Special procedures – contamined sites

### 1.2 Measurement for payment

.1 Costs relating to sodding are included in the prices for items entitled “Trees cuts and diposal” and “Removal of stumps from felled trees” for which payment terms are set out in Section 012900 – Measurement for payment.

### 1.3 Reference standards

.1 U.S. Environmental Protection Agency (EPA) / Office of Water

1. EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

### 1.4 Definitions

.1 Clearing isolated trees consists of cutting off to not more than specified height above ground of designated trees and disposing of felled trees and debris.

.2 Underbrush clearing consists of removal from treed areas of undergrowth, deadwood and trees smaller than 50 mm trunk diameter and disposing of fallen timber and surface debris.

.3 Grubbing consists of excavation and disposal of stumps and roots to not less than specified depth below existing ground surface.

.4 EAB refers to Emerald Ash Borer a non-native, invasive beetle that is highly destructive to ash trees where it occurs.

.1 Woodchips in the context of EAB consist of untreated, raw bark and wood fragments broken or shredded from logs or branches. Woodchips are to be less than 2.5 cm in at least any two dimensions.

.2 Enclosed vehicle in the context of EAB consist of any vehicle transporting regulated wood material that is equipped to prelude the loss of materials or the escape of EAB while in transit.

**1.5 Action and informational submitalls**

.1 Provide submittals in accordance with Section ‘’ 013400 – Shop drawing, product and sample descriptions’’.

.2 Sample :

1. Submit 3 samples of each material listed below for approval prior to delivery of materials to project site.
2. Tree wound paint: one litre can with manufacturer's label
3. Herbicide: one litre can with manufacturer's label

.3 Submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

.4 Provide manufacturer's installation instructions.

**1.6 Quality assurance**

.1 Do construction occupational health and safety in accordance with Section ‘’015450 – Safety measures’’.

**1.7 Storage and protection**

.1 Prevent damage to fencing, root systems of trees, existing pavement, water courses, trees and shrubs which are to remain:

1. Repair damaged items to approval of the Engineer;
2. Replace trees designated to remain, if damaged, as directed by the Engineer.

**1.8 Waste management and disposal**

.1 Separate waste materials for reuse in accordance with Section ‘’017419 - Waste Management and Disposal ‘’.

.2 Consider felled timber from which saw logs, pulpwood, posts, poles, ties, or fuel wood can be produced as saleable timber.

.3 Ash wood mixed with the wood of other species is to all be managed and disposed of as ash wood.

## PART 2 - PRODUCTS

### 2.1 Material

.1 Bituminous based paint of standard manufacture specially formulated for tree wounds.

.2 Soil Material for Fill :

1. Excavated soil material: free of debris, roots, wood, scrap material, vegetable matter, refuse, soft unsound particles, deleterious, or objectionable materials.

2. Remove and store soil material for reuse.

## PART 3 - EXECUTION

### 3.1 Temporary erosion and sedimentation control

.1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.

.2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

.3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

### 3.2 Preparation

.1 Inspect site and verify with the Engineer, items designated to remain.

.2 Locate and protect utility lines: preserve in operating condition active utilities traversing site:

1. Notify the Engineer immediately of damage to or when unknown existing utility lines are encountered.

2. When utility lines which are to be removed are encountered within area of operations, notify the Engineer in ample time to minimize interruption of service.

.3 Notify utility authorities before starting grubbing.

.4 Keep roads and walks free of dirt and debris.

### 3.3 Application

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

### 3.4 Isolated trees

.1 Cut off isolated trees as indicated by the Engineer at height of not more than 300 mm above ground surface.

.2 Grub out isolated tree stumps.

.3 Prune individual trees as indicated.

.4 Trim trees designated to be left standing within cleared areas of dead branches 4 cm or more in diameter; and trim branches to heights as indicated.

.5 Cut limbs and branches to be trimmed close to bole of tree or main branches.

### 3.5 Grubbing

.1 Remove and dispose of roots larger than 7.5 cm in diameter, matted roots, and designated stumps from indicated grubbing areas.

.2 Grub out stumps and roots to not less than 200 mm below ground surface.

.3 Fill depressions made by grubbing with suitable material and to make new surface conform with existing adjacent surface of ground.

### 3.6 Finished surface

.1 Leave ground surface in condition suitable for immediate grading operations to approval of the Engineer.

### 3.7 Cleaning

.1 Proceed in accordance with section « 017100- Cleaning ».

.2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, flagging tape, tools and equipment.

**FIN DE LA SECTION**

## PART 1 – GENERAL

.1 This section applies to the excavation and backfilling activities required for the completion of the work covered by the present contract documents.

### 1.1 Related sections

.1 Section 012900 – Measurement for payment

.2 Section 013400 – Shop drawings, product and sample descriptions

.3 Section 013513.43 – Special procedures – contaminated sites

.4 Section 015610 – Environmental protection

.5 Section 017100 – Cleaning

.6 Section 321160.01 – Granular Sub-Base

.7 Section 329119.13 – Topsoil Placement And Grading

.8 Section 329223 - Sodding

### 1.2 Measurement for payment

.1 Costs relating to excavation, trenching and backfilling work are included in the prices for items entitled “Backfillinf with MG-112 stone granular material” and “ Implementation of 0-300 mm rirap”, for which the payment terms are set out in Section 012900 – Measurement for payment.

### 1.3 References

*(Current editions)*

.1 American Society for Testing and Materials International (ASTM)

1. ASTM C117, Standard Test Method for Material Finer than 0.075 mm (No.200) Sieve in Mineral Aggregates by Washing.
2. ASTM C136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
3. ASTM D422-63, Standard Test Method for Particle-Size Analysis of Soils.
4. ASTM D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort.
5. ASTM D1557, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort.
6. ASTM D4318, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

.2 Canadian General Standards Board (CGSB)

1. CAN/CGSB-8.1, Sieves, Testing, Woven Wire, Inch Series.
2. CAN/CGSB-8.2, Sieves, Testing, Woven Wire, Metric.

.3 Canadian Standards Association (CSA International)

1. CAN/CSA-A3000, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
2. CSA-A3001, Cementitious Materials for Use in Concrete.
3. CSA-A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.

.4 U.S. Environmental Protection Agency (EPA)/Office of Water

1. EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

## 1.4 Definitions

.1 Excavation classes: two (2) classes of excavation are acknowledged; common excavation and rock excavation.

1. Rock excavation: solid rock material in excess of 1.00 $m^3$. Frozen material are not classified as rock.
2. Common excavation: excavation of materials of whatever nature, which are not included under definitions of rock excavation.
3. Unclassified excavation: excavation of deposits of whatever character encountered in the Work.

.2 Waste material: surplus material or excavated material unsuitable for use in the present Work.

.3 Borrow material: material obtained from locations outside the area to be graded and required for construction of fill areas or for other portions of the Work.

.4 Recycled fill material: material, considered inert, obtained from alternate sources and engineered to meet requirements of fill areas.

.5 Unsuitable materials:

1. Weak, chemically unstable, and compressible materials.
2. Frost susceptible materials:

    1. Fine grained soils with plasticity index less than 10 when tested to ASTM D4318 standard, and gradation within limits specified when tested to ASTM standards.
    2. Table:

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

3. Coarse-grained soils containing more than 20% by weight passing 0.075 mm sieve.

.6 Unshrinkable fill: very weak mixture of cement, concrete aggregates and water that resists settlement when placed in trenches for utility conduits, and capable of being readily excavated.

**1.5 Action and informational submittals**

.1 Submit submittals in accordance with Section 013400, “Shop drawings, product descriptions and samples.”

.2 Quality control: in accordance with the requirements set out on the drawings and in the specifications.

.3 Submit proposed dewatering and heave prevention methods as described in PART 3 of the present section to the Engineer for review.

.4 Notify the Engineer in writing at least three (3) working days prior to the excavation work, to ensure cross sections are established where required.

.5 Notify the Engineer in writing when the bottom of the excavation is reached.

.6 Preconstruction submittals

1. Submit construction a list for the major equipment and materials to be used in the present section prior to the start of Work.
2. Submit records of underground utility locations, indicating: location plan of existing utilities as found on the site, public utility easement data, and location plan of relocated and abandoned services, as required.
3. Submit technical data sheets for planned borrow material for approval.

.7 Samples

1. At least two (2) weeks prior to the start of backfilling works, notify the Engineer of the proposed source of fill materials and provide access for sampling.

### 1.6 Quality assurance

.1 Obtain approval from the laboratory mandated by the Engineer before using soil.

.2 Health and safety

1. Implement construction occupational health and safety measures required as stipulated in Section 015450 – Safety measures.

### 1.7 Existing conditions

.1 Soil in place contains a variable level of contamination. Prior to proceeding with backfill, be sure to validate that the soil in place is reusable.

.2 Buried utility structures

1. Comply with the requirements set out in Section 010050 – General instructions.

.3 Elements present on-site

1. Conduct, with the Engineer, a condition survey of the existing trees and other plants, lawns, fencing, safety railings, conduits, pavement and any other elements in the construction zones that could be affected by the work.

2. During the execution of the work, protect elements at the site that have not been dismantled from damage. In the event they are damaged, immediately restore them to their pre-construction condition.

## PART 2 – PRODUCTS

### 2.1 Materials

.1 Backfill materials as indicated on the drawings.

.2 Granular materials are to be in accordance to the requirements set out in table 312333.01 – 1.

**Table 312333.01 – Grading particle size specification for granular materials**

| Matériau granulaire | Tamis, en mm | | | | | | | | | Tamis, en $\mu$m | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 112 | 80 | 56 | 40 | 31,5 | 20 | 14 | 5 | 1,25 | 315 | 80 |
| | Passant, en % | | | | | | | | | | |
| MG 20 | | | | s. o. | 100 | 90-100 | 68-93 | 35-60 | 15-38 | 5-17 | 2,0-7,0 |
| MG 20b | | | | s. o. | 100 | 90-100 | 68-93 | 35-60 | 15-38 | 5-17 | 5,0-11,0 |
| MG 31,5 | | | 100 | s. o. | 90-100 | s. o. | 60-90 | 30-60 | 15-40 | 5-20 | 2,0-8,0 |
| MG 56 | | 100 | 82-100 | s. o. | 55-85 | s. o. | s. o. | 25-50 | 11-30 | 4-18 | 2,0-7,0 |
| MG 80 | 100 | 80-100 | 60-85 | s. o. | 35-60 | s. o. | 23-45 | 12-29 | 5-17 | 1-15 | 0-10,0 |
| MG 112 | 100 | s. o. | s. o. | s. o. | s. o. | s. o. | s. o. | 12-100 | s. o. | s. o. | 0-10,0 |

NOTES —

1 La mention s. o. signifie qu'il n'y a pas d'exigences pour le tamis concerné.

2 Comme il est indiqué dans l'objet et le domaine d'application, les exigences du présent tableau s'appliquent avant le transport et la mise en œuvre des granulats. Certains donneurs d'ouvrage peuvent établir des exigences qui s'appliquent après la mise en œuvre des granulats, notamment dans les clauses techniques de devis particuliers ou dans un cahier des charges. Il importe alors de noter que les conditions de mise en œuvre, notamment le compactage, la mise en circulation sur le chantier et la ségrégation peuvent avoir une incidence sur la granularité des matériaux.

.3 The riprap with stones of 0-300 mm caliber shall respect the following granulometry:

.1 Stone percentage greater than 300 mm shall be less than 10%.

.2 No stone shall be greater than 350 mm.

.3 Stone percentage less than 150 mm shall be less than 50%.

.4 Stone percentage less than 100 mm shall be less than 10%.

.5 The intrinsic characteristics of the stones must meet the requirements of Category 5 in Table 312333.01 - 2.

**Table 312333.01–2 Large aggregates category according to their intrinsic characteristics**

| Caractéristique intrinsèque | Méthode d'essai | Catégories de gros granulats | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 |
| Micro-Deval (MD), en % | LC 21-070 | ≤ 15 | ≤ 20 | ≤ 25 | ≤ 30 | ≤ 35 | ≤ 40 |
| Los Angeles (LA), en % | LC 21-400 | ≤ 35 | ≤ 45 | ≤ 50 | ≤ 50 | ≤ 50 | ≤ 50 |
| Micro-Deval et Los Angeles (MD + LA), en % | LC 21-070 et LC 21-400 | ≤ 40 | ≤ 55 | ≤ 70 | ≤ 75 | ≤ 80 | ≤ 85 |

## PART 3 – EXECUTION

### 3.1 Temporary erosion and sedimentation control

.1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

.2 Inspect, maintain and repair implemented control methods as required.

.3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during the work.

.4 Also refer to Section 013543 – Environmental protection.

### 3.2 Preparation

.1 Cut pavement or sidewalk neatly along limits of proposed excavation in order that surface may break evenly and cleanly.

### 3.3 Preparation/protection

.1 Protect existing features in accordance with the drawings and the specifications, as well as relevant municipal regulations.

.2 Keep excavations clean and free of standing water and loose soil.

.3 Where soil is subject to significant volume change due to change in moisture content, cover and protect to the Engineer's satisfaction.

.4 Protect natural and man-made features required to remain undisturbed. Unless otherwise indicated or located in an area to be occupied by the new construction, protect existing trees to be preserved from damage.

.5 Protect buried services that are required to remain undisturbed.

**3.4 Stripping of topsoil**

.1 Comply with Section 329119.13 – Topsoil placement and grading.

**3.5 Stockpiling**

.1 Stockpile granular materials in manner to prevent segregation.

.2 Protect fill materials from contamination.

.3 Take the necessary measures to prevent excavated, stockpiled material from contaminating surrounding soil.

.4 Implement sufficient erosion and sediment control measures to prevent sediment release outside construction boundaries and into water bodies.

**3.7 Dewatering and heave prevention**

.1 Keep excavations free of water while work is in progress.

.2 At least five (5) working days prior to the start of the excavation work, submit the details of the methods the Contractor proposes to dewater the excavations.

.3 Protect open excavations from flooding and damage due to surface run-off.

.4 Dispose of water in accordance with Section 015610 – Environmental protection, and in a manner not detrimental to public and private property or portion of the work completed or under construction.

.5 Provide flocculation tanks, settling basins, or other treatment facilities to remove suspended solids or other materials before discharging to storm sewers, watercourses or drainage areas.

**3.8 Excavation**

.1 Advise Departmental Representative at least three (3) days prior to start of excavation work.

.2 Remove roadway pavement as well as other obstructions encountered during excavation work.

.3 Excavation work shall not interfere with the bearing capacity of adjacent foundations or threaten the integrity of existing structures.

.4 The Contractor shall plan for separation of dry materials present in the ground prior to disposal of contaminated soil, in accordance with the requirements of Section 013513.43. Dispose of these contaminated materials at a site approved by the MDDELCCFP.

.5 Keep excavated and stockpiled materials at a safe distance away from the edge of the trench.

.6 Restrict vehicle operations directly adjacent to open trenches.

.7 Notify the Engineer when bottom of excavation is reached.

.8 Remove unsuitable material from the trenches.

.9 Install geotextile as required.

**3.9 Fill types and compaction**

.1 Comply with compaction requirements indicated on the drawings.

.2 Use the types of fill indicated on the drawings or specified below. Compaction densities are percentages of maximum densities calculated according to ASTM D698 and ASTM D1557 standards.

**3.10 Backfilling**

.1 Backfilling work includes supply and placement of backfill to the bicycle path infrastructure and landscaping subgrade line.

.2 Do not proceed with backfilling operations until:

1. Engineer has inspected and approved of construction below finish grade.

.3 Areas to be backfilled to be free from debris, water and frozen ground.

.4 It is forbidden to use backfill material that is frozen or contains debris.

.5 Place backfill material in uniform layers not exceeding 300 mm compacted thickness up to grades indicated. Compact each layer before placing succeeding layer.

.6 Backfill around structures.

**END OF SECTION**

## Part 1 GENERAL

### 1.1 Products installed but not supplied under this section

.1 Granular based material: supplied by Owner from the quarry instead of from borrow.

### 1.2 Related requirements

.1 Section “011100 – Summary of Works”.

.2 Section “012900 – Measurement for Payment”.

.3 Section “013400 – Shop Drawings, Product and Sample Descriptions”.

.4 Section “014100 – Testing Laboratories”.

.5 Section “017100 – Cleaning”.

.6 Section “312333.01 – Excavating, Trenching and Backfilling”.

.7 Section “321216 – Asphalt Paving”.

.8 Tender Form.

### 1.3 Measurement and payment

.1 The costs relating to the installation of the granular foundation layer are included in the price of the items entitled "Granular foundation, prepared hot-mixed asphalt and marking", the payment methods of which are described in section "012900 - Measurement for Payment".

### 1.4 Reference standards

.1 ASTM International

.1 ASTM C117-04, Standard Test Methods for Material Finer Than 0.075 mm Sieve in Mineral Aggregates by Washing.

.2 ASTM C131-06, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

.3 ASTM C136-06, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

.4 ASTM D422-63 (2007), Standard Test Method for Particle-Size Analysis of Soils.

.5 ASTM D698-07e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400ft-lbf/ft$^3$) (600kN-m/m$^3$).

.6 ASTM D1557-09, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000ft-lbf/ft$^3$) (2,700kN-m/m$^3$).

.7 ASTM D1883-07e2, Standard Test Method for CBR (California Bearing Ratio) of Laboratory Compacted Soils.

.8 ASTM D4318-10, Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.

.2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.

## 1.5 Action and informational submittals

.1 Submit in accordance with Section “013400 - Shop Drawings, Product and Sample Descriptions”.

## 1.6 Delivery, storage and handling

.1 Deliver, store and handle materials in accordance with the manufacturer's written instructions.

.2 Storage and Handling Requirements:

.1 Store materials in accordance with the manufacturer's recommendations.

.2 Replace defective or damaged materials with new.

# Part 2 PRODUCTS

## 2.1 Materials

.1 Granular sub-base material: in accordance with the following requirements:

.1 Crushed, pit run or screened stone, gravel or sand.

.2 Gradations to be within limits specified when tested to ASTM C136 and ASTM C117. Sieve sizes to CAN/CGSB-8.2.

.3 Table

| Sieve Designation | % Passing | | | |
|---|---|---|---|---|
| 100 mm | - | - | - | - |
| 75 mm | [100] | [100] | [100] | - |
| 50 mm | - | - | - | [100] |
| 37.5 mm | - | - | - | - |
| 25 mm | [55-100] | - | - | [60-100] |
| 19 mm | - | - | - | - |
| 12.5 mm | - | - | - | [38-70] |
| 9.5 mm | - | - | - | - |

| | | | | |
|---|---|---|---|---|
| 4.75 mm | [25-100] | [25-85] | - | [22-55] |
| 2.00 mm | [15-80] | - | - | [13-42] |
| 0.425 mm | [4-50] | [5-30] | [0-30] | [5-28] |
| 0.180 mm | - | - | - | - |
| 0.075 mm | [0-8] | [0-10] | [0-8] | [2-10] |

.4 Other properties as follows:

.1 Liquid Limit: to ASTM D4318, Maximum 25.

.2 Plasticity Index: to ASTM D4318, Maximum 6.

.3 Los Angeles degradation: to ASTM C131.

.1 Maximum loss by mass: 40 %.

## Part 3 EXECUTION

### 3.1 EXAMINATION

.1 Verification of Conditions: verify conditions of substrate previously installed under other Sections or Contracts are acceptable for granular sub-base installation in accordance with manufacturer's written instructions.

.1 Visually inspect substrate in presence of the Engineer.

.2 Inform the Engineer of unacceptable conditions immediately upon discovery.

.3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from the Engineer.

### 3.2 PREPARATION

.1 Temporary Erosion and Sedimentation Control:

.1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust, and this, according to requirements of authorities having jurisdiction.

.2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

.3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

### 3.3 PLACING

.1 Place granular sub-base after subgrade is inspected and approved by the Engineer.

.2 Construct granular sub-base to depth and grade in areas indicated.

.3 Ensure no frozen material is placed.

.4 Place material only on clean unfrozen surface, free from snow or ice.

.5 Place granular sub-base materials using methods which do not lead to segregation or degradation.

.6 Place material to full width in uniform layers not exceeding 200 mm compacted thickness.

.1 The Engineer may authorize thicker lifts if specified compaction can be achieved.

.7 Shape each layer to smooth contour and compact to specified density before succeeding layer is placed.

.8 Remove and replace portion of layer in which material has become segregated during spreading.

## 3.4 COMPACTION

.1 Compaction equipment to be capable of obtaining required material densities.

.2 Compact to density of not less than 98 % corrected maximum dry density.

.3 Shape and roll alternately to obtain smooth, even and uniformly compacted sub-base.

.4 Apply water as necessary during compaction to obtain specified density.

.5 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.

## 3.5 CLEANING

.1 Progress Cleaning: clean in accordance with Section “017411 – 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 “017411 – Cleaning”.

## 3.6 SITE TOLERANCES

**.1** The permissible deviation, with regard to the finished foundation layer, is 10 mm more or less from the prescribed level dimension; this difference cannot however be uniform over the entire surface of the foundation layer.

## 3.7 PROTECTION

.1 Maintain finished sub-base in condition conforming to this section until succeeding base is constructed, or until granular sub-base is accepted by the Engineer.

**END OF SECTION**

## PART 1 – GENERAL

### 1.1 Related sections

.1 Section “011100 – Summary of Works”.

.2 Section “012900 – Measurement for Payment”.

.3 Section “013400 – Shop Drawings, Product and Sample Descriptions”.

.4 Section “014100 – Testing Laboratories”.

.5 Section “017100 – Cleaning”.

.6 Section “312333.01 – Excavating, Trenching and Backfilling”.

.7 Section “321116.01 – Granular Sub-Base”.

.8 Section “329119.13 – Topsoil Placement And Grading”.

### 1.2 Measurement for payment

.1 Costs relating to supply and laying of bituminous pavement on the pedestrian bridge approaches and bicycle path are included in the price for the item entitled, “Granular foundation, prepared hot-mixed asphalt and marking”, for which payment terms are set out in Section 012900 – Measurement for payment.

### 1.3 References

*(Current editions)*

.1 MTQ

1. Cahier des charges et devis généraux (CCDG).
2. Tome II – Conception des ouvrages routiers
3. Tome VII – Matériaux – Ouvrages routiers.

.2 Perform asphalt pavement work in accordance with the MTQ’s *Cahier des Charges et Devis Généraux – Infrastructures routières – Construction et réparation (CCDG)*, unless otherwise indicated. Notwithstanding the indications in the CCDG, the measurement and the mode of payment shall be as indicated in the Owner’s general administrative clauses.

.3 In the event that any of these references contradict, the special technical provisions of the present specification section shall take precedence.

### 1.4 Action and informational submittals

.1 Submit submittals in accordance with the provisions set out in Section 013400 – Shop drawings, product descriptions and samples.

.2 Submit mix designs for all types of asphalt pavement for approval at least two (2) weeks before start of work. Start work only when mix designs have been approved.

## PART 2 – PRODUCTS

### 2.1 Asphalt pavement mix materials

.1 Aggregate materials and bitumen to be used in the pavement mix design are as follows:

.1 Coarse aggregate with intrinsic category 3 characteristics and category C manufacturing characteristics, in accordance with the Standard 4201 in the MTQ's *Tome VII – Matériaux;*

.2 Fine aggregate with intrinsic category 2 characteristics;

.3 Performance class PG64H-28 asphalt, in accordance with Standard 4101 in the MTQ'*s Tome VII – Matériaux.*

.2 Mix: Single 50 mm lift of ESG-10 asphalt.

.3 Asphalt binder: Asphalt emulsion in accordance with Standard 4105 in the MTQ's *Tome VII – Matériaux.*

## PART 3 – EXECUTION

### 3.1 General

.1 Lay asphalt pavement according to technical specifications of the MTQ's *Cahier des charges et devis généraux.*

.2 Prior to laying asphalt pavement, spread asphalt binder over the granular surface, in accordance with Article 13.2 of the MTQ's *Cahier des charges et devis généraux.*

.3 Take samples and cores at frequency stipulated in the MTQ's *Cahier des charges et devis généraux*. The minimum number of samples or cores is one (1) for the pedestrian bridge.

.4 For the sections of pavement that do not meet the specifications set out in the drawings and the specifications, it is the Contractor's responsibility to

perform remedial work, at his own cost, according to the Engineer's and the laboratory's recommendations.

.5 The paving works have to be done after the thaw period prescribed by MTQ (May 5th, 2023) and have to be finish before the ending date for asphalt pavement (November 9th, 2023).

### 3.2 Adjustments and transition to existing pavement

.1 Create transverse joints between the existing pavement and the new pavement carefully, in accordance with Article 13.3.4.7 of the MTQ's *Cahier des Charges et Devis Généraux – Infrastructures routières – Construction et réparation.*

.2 Cut with a pavement saw, the existing pavement over its entire thickness so as to obtain a vertical face; impregnate this face with a thin bonding layer consisting of hot bitumen.

.3 Compact the transversal joints to provide a smooth riding surface. Use methods to prevent rounding of the compacted surface at the joints.

**END OF SECTION**

## Part 1 GENERAL

### 1.1 Related requirements

.1 Section “011100 – Summary of Works”.

.2 Section “012900 – Measurement for Payment”.

.3 Section “013400 – Shop Drawings, Product and Sample Descriptions”.

.4 Section “013543 – Environmental Procedures”.

.5 Section “014100 – Testing Laboratories”.

.6 Section “017100 – Cleaning”.

.7 Section “321216 – Asphalt Paving”.

.8 Tender Form.

### 1.2 Measurement and payment

.1 The costs relating to the pavement marking are included in the price of the items entitled "Granular foundation, prepared hot-mixed asphalt and marking", the payment methods of which are described in section "012900 - Measurement for Payment".

### 1.3 Reference standards

.1 ASTM International

.1 ASTM E1360 90 (2000) e1, Standard Practice for Specifying Color by Using the Optical Society of America Uniform Color Scales System.

.2 ASTM D4797 88 (2004) Standard Test Methods for Chemical and Gravimetric Analysis of White and Yellow Thermoplastic Traffic Marking Containing Lead Chromate and Titanium Dioxide.

.2 Environment Canada (EC)

.1 Volatile Organic Compound (VOC) Concentration Limits for Architectural Coatings Regulations, SOR/2009-264.

.3 Green Seal (GS)

.1 GS-11 - Edition 3.2 (2015), Standard for Paints and Coatings.

.4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (SDS).

.5 Master Painters Institute (MPI)

.1 Architectural Painting Specification Manual - 2019.

.1 MPI #32, Traffic Markings Paint, Alkyd.

.2 MPI #97, Latex Traffic Marking Paint.

.6 South Coast Air Quality Management District (SCAQMD)

.1 SCAQMD Rule 1113-16, Architectural Coatings.

## 1.4 Action and informational submittals

.1 Submit in accordance with Section “013400 - Shop Drawings, Product and Sample Descriptions”.

.2 Product Data Sheets:

.1 Submit manufacturer's printed product literature and data sheets for pavement markings and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit 2 copies of WHMIS SDS in accordance with Section “013543 - Environmental Procedures”.

.3 Samples:

.1 Submit to the Engineer the following material sample quantities at least two (2) weeks prior to commencing work.

.1 Two 1 L samples of each type of paint.

.2 One 1 kg sample of glass beads.

.3 Sampling to MPI Painting Manual.

.2 Mark samples with name of project and its location, paint manufacturer's name and address, name of paint, MPI specification number and formulation number and batch number.

.4 Sustainable Design Submittals:

.1 Construction Waste Management:

.1 Submit project Waste Management Plan highlighting recycling and salvage requirements.

.2 Submit calculations on end-of-project recycling rates, salvage rates, and landfill rates demonstrating that 50 % of construction wastes were recycled or salvaged.

.2 Recycled Content:

.1 Submit listing of recycled content products used, including details of required percentages or recycled content materials and products, showing their costs and percentages of post-consumer content, and total cost of materials for project.

.3 Low-Emitting Materials: submit listing of paints and coatings to comply with VOC and chemical component limits or restrictions requirements.

### 1.5 Delivery, storage and handling

.1 Deliver, store and handle materials in accordance with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:

.1 Store materials indoors, in dry location, off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect materials from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

.4 Packaging Waste Management: remove for reuse as specified in the Construction Waste Management Plan, in accordance with Section “017419 - Waste Management and Disposal”.

### 1.6 Site conditions

.1 Sustainable Design Provisions:

.1 Seasonal restriction for high VOC content traffic marking coatings.

.1 Traffic marking coating application between May 1st and October 15th subject to seasonal use restriction and have VOC concentration maximum 150 g/L.

## Part 2 PRODUCTS

### 2.1 Materials

.1 Alkyd Traffic Paint and Markings:

.1 Product: MPI #32, Alkyd traffic marking meeting requirements of ASTM D4797e.

.2 Traffic Marking Coatings: maximum VOC limit 450 g/L in accordance with SOR/2009-264 – Appendix 1 Standard.

.3 Colour: in accordance with ASTM E1360 Standard, yellow in accordance with MPI Architectural Painting Specification Manual.

.4 Upon request, the Engineer will supply qualified product list of paints applicable to work. Qualified paints may be used but where required, the Engineer reserves right to perform further tests.

.2 Thinner: supplied by a manufacturer recognized by the MPI.

.3 Glass reflective beads: type suitable for application to wet paint surface, intended to ensure retroreflection of roadway markings.

## Part 3 EXECUTION

### 3.1 Examination

.1 Verification of Conditions: verify conditions of substrates and surfaces to receive pavement markings acceptable for product installation in accordance with MPI instructions prior to pavement markings application.

.1 Visually inspect substrate in presence of the Engineer.

.2 Pavement surface: dry, free from water, frost, ice, dust, oil, grease and other deleterious materials.

.3 Proceed with Work only after unacceptable conditions rectified.

### 3.2 Equipment requirements

.1 Paint applicator: approved pressure type mobile with positive shut-off distributor capable of applying paint in single, double and dashed lines and capable of applying marking components uniformly, at rates specified, and to dimensions as indicated.

.2 Distributor: capable of applying reflective glass beads as overlay on freshly applied paint.

### 3.3 Application

.1 The Engineer determines the layout of the pavement markings so as to match with the existing marking at the approaches to the pedestrian bridges.

.2 Unless otherwise indicated by the Engineer, apply the paint only when the maximum wind speed is less than 60 km/h, the maximum air temperature is greater than 10 degrees Celsius and that no rain is to fall in the next four (4) hours.

.3 Apply uniformly and at a rate of 3 $m^2$/L the paint used to delimit the areas and circulation in order to obtain, after drying, a minimum film of 8 mils thick, in accordance with the content of the Architectural Painting Specification Manual of the MPI regarding the preparation of surfaces, the application and the list of approved products.

.4 Do not thin paint unless approved by the Engineer.

.5 Paint lines of uniform colour and density with sharp edges.

.6 Thoroughly clean distributor tank before refilling with paint of different colour.

.7 Apply glass beads at rate of 0.5 kg/L of painted area immediately after application of paint.

### 3.4 Tolerance

.1 Paint markings: within plus or minus 12 mm of dimensions indicated.

.2 Remove incorrect markings.

## 3.5 Cleaning

.1 Progress Cleaning: clean in accordance with Section “017411 – 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 “017411 – Cleaning”.

.3 Waste Management: separate waste materials for recycling in accordance with Section “017419 - Waste Management and Disposal”.

## 3.6 Protection

.1 Protect pavement markings until dry.

.2 Repair damage to adjacent materials caused by pavement marking application.

**END OF SECTION**

## Part 1 GENERAL

### 1.1 Related requirements

.1 Section “011100 – Summary of Works”.

.2 Section “012900 – Measurement for Payment”.

.3 Section “013400 – Shop Drawings, Product and Sample Descriptions”.

.4 Tender Form.

### 1.2 Measurement and payment

.1 The costs relating to the supply and installation of chain link fences are included in the price of the items entitled "Installation of the fences with steel posts and chain links (including the concrete bases for the posts and anchor plates)", the payment methods of which are described in section "012900 - Measurement for Payment".

### 1.3 Reference standards

.1 ASTM International

.1 ASTM A53/A53M-18, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.

.2 ASTM A90/A90M-13 (2018), Standard Test Method for Weight [Mass] of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings.

.3 ASTM A121-19, Standard Specification for Zinc-Coated (Galvanized) Steel Barbed Wire.

.4 A653/A653M-19, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.5 ASTM C618-19, Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.

.6 ASTM F1664-08 (2018), Standard Specification for Poly(Vinyl Chloride) (PVC)-Coated Steel Tension Wire Used with Chain-Link Fence.

.7 ASTM A123/A123M-17, Standard Specification for Zinc (Hot Dip Galvanized) coatings on Iron and Steel Products.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-138.1-2019, Fabric for Chain Link Fence.

.2 CAN/CGSB-138.2-2019, Steel Framework for Chain Link Fence.

.3 CAN/CGSB-138.3-2019, Installation of Chain Link Fence.

.4 CAN/CGSB-1.181-99, Ready-Mixed Organic Zinc-Rich Coating.

.3 CSA Group (CSA)

.1 CSA A23.1/A23.2-F14, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.

.2 CAN/CSA-A3000-18, Cementitious Materials Compendium.

.3 CAN/CSA-G164-M92 (C2003), CAN/CSA G164 M92 (C2003), Hot-dip galvanizing of irregularly shaped objects.

.4 Master Painters Institute (MPI)

.1 Architectural Painting Specification Manual - 2019.

### 1.4 Action and informational submittals

.1 Submit in accordance with Section “013400 - Shop Drawings, Product and Sample Descriptions”.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for concrete mixes, fences and posts and include product characteristics, performance criteria, physical size, finish and limitations.

### 1.5 Delivery, storage and handling

.1 Deliver, store and handle materials in accordance with the manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:

.1 Store materials in accordance with the manufacturer's recommendations.

.2 Store and protect fence materials from damage.

.3 Replace defective or damaged materials with new.

## Part 2 PRODUCTS

### 2.1 Materials

.1 Concrete mixes and materials: in accordance with Section “033000 - Cast-in-Place Concrete”.

.2 Chain-link fence fabric: to CAN/CGSB-138.1 Standard.

.1 Type 1, Class A, heavy style, Grade 2.

.2 Height of chain link: 1.8 m.

.3 Posts, braces and rails: to CAN/CGSB-138.2, galvanized steel pipe. Dimensions as indicated.

.4 Tie wire fasteners: steel wire.

.5 Tension bar: to ASTM A653/A653M, 5 x 20 mm minimum, galvanized steel.

.6 Fittings and hardware: to CAN/CGSB-138.2, galvanized steel.

.1 Tension bar bands: 3 x 20 mm minimum galvanized steel or 5 x 20 mm minimum aluminum.

.2 Post caps to provide waterproof fit, to fasten securely over posts and to carry top rail.

.3 Projection of approximately 300 mm long to project from fence at 45 degrees above horizontal.

.4 Turnbuckles to be press forged.

.7 Organic zinc rich coating: to CAN/CGSB-1.181.

.8 Grounding rod: “Copperweld” copper-plated rods 3 m long.

**2.2 Finishes**

.1 Galvanizing:

.1 For chain link fabric: to CAN/CGSB-138.1, Grade 2.

.2 For pipe: 550 g/$m^2$minimum to ASTM A90.

.3 For other fittings: to ASTM A123/A123M.

**Part 3 EXECUTION**

**3.1 Examination**

.1 Verification of Conditions: verify conditions of substrate previously installed under other Sections or Contracts are acceptable for fence installation in accordance with manufacturer's written instructions.

.1 Visually inspect substrate in presence of the Engineer.

.2 Inform the Engineer of unacceptable conditions immediately upon discovery.

.3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from the Engineer.

**3.2 Preparation**

.1 Temporary Erosion and Sedimentation Control:

.1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and adjacent walkways, according to requirements of authorities having jurisdiction.

.2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

.3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

.2 Grading:

.1 Remove debris and correct ground undulations along fence line to obtain smooth uniform gradient between posts.

.1 Provide clearance between bottom of fence and ground surface of 30 mm to 50 mm.

**3.3 Erection of fence**

.1 Erect the fence along the layout indicated on the plans in accordance with the Engineer's instructions and in accordance with standard CAN / CGSB-138.3.

.2 Excavate post holes to dimensions indicated on the plans.

.3 Space line posts 2.4 m apart, measured parallel to ground surface.

.4 Install corner post where change in alignment exceeds 10 degrees.

.5 Install end posts at end of fence.

.6 Place concrete in post holes then embed posts into concrete to depths indicated.

.1 Extend concrete 50 mm above ground level and slope to drain away from posts.

.2 Brace to hold posts in plumb position and true to alignment and elevation until concrete has set.

.7 Install fence fabric after concrete has cured, minimum of three (3) days.

.8 Install brace between end and nearest intermediate post.

.1 Install braces on both sides of corner and straining posts in similar manner.

.9 Install overhang tops and caps.

.10 Install top rail between posts and fasten securely to posts and secure waterproof caps and overhang tops.

.11 Install bottom tension wire, stretch tightly and fasten securely to end, corner and straining posts with turnbuckles and tension bar bands.

.12 Lay out fence fabric. Stretch tightly to tension recommended by manufacturer and fasten to end, corner and straining posts with tension bar secured to post with tension bar bands spaced at 300 mm intervals.

.13 Secure fabric to top rails, line posts and bottom tension wire with tie wires at 450 mm intervals.

.1 Give tie wires minimum two (2) twists.

.14 Install grounding rods as indicated.

### 3.4 Touch up

.1 Clean damaged surfaces with wire brush removing loose and cracked coatings. Apply two (2) coats of organic zinc-rich paint to damaged areas as directed by the Engineer.

.1 Pre-treat damaged surfaces according to manufacturers' instructions for zinc-rich paint.

### 3.5 Cleaning

.1 Progress Cleaning: clean in accordance with Section “017411 – 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 “017411 – Cleaning”.

**END OF SECTION**

## Part 1 GENERAL

### 1.1 Related sections

.1 Section 013400 – Shop drawings, product and sample descriptions

.2 Section 014100 – Testing laboratory services

.3 Section 017100 – Cleaning

.4 Section 329223 – Sodding

### 1.2 Measurement for Payment

.1 Costs relating to topsoil placement and grading are included in the price for the items entitled, “Sodding retained by their own weight (including topsoil)” and “Sodding retained by stakes (including topsoil)” for which payment terms are set out in Section 012900 – Measurement for payment.

.2 Topsoil analysis: The Engineer will pay for the cost of topsoil analyses as specified in Section 014100 – Testing laboratories.

### 1.3 References

.1 Agriculture and Agri-Food Canada

.1 The Canadian System of Soil Classification, Third Edition, 1998.

.2 Canadian Council of Ministers of the Environment

.1 PN1340-2005, Guidelines for Compost Quality.

.3 U.S. Environmental Protection Agency (EPA)/Office of Water

.1 EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

.4 Bureau of Standardization du Quebec

.1 NQ 0605-100, Landscaping with plants.

### 1.4 Definitions

.1 Compost:

.1 Mixture of soil and decomposing organic matter used as fertilizer, mulch, or soil conditioner.

.2 Compost is processed organic matter containing 40% or more organic matter as determined by Walkley-Black or Loss On Ignition (LOI) test.

.3 Product shall be sufficiently decomposed (i.e. stable) so that any further decomposition does not adversely affect plant growth (C/N ratio below 25), and contain no toxic or growth-inhibiting contaminates.

.4 Composed bio-solids: shall be in accordance with the Canadian Council of Ministers of the Environment (CCME) requirements published in the Guidelines for the Compost Quality, Category A.

### 1.5 Action and informational submittals

.1 Submit submittals in accordance with Section 013400, “Shop drawings, product descriptions and samples.”

### 1.6 Quality assurance

.1 Pre-implementation meetings: Conduct pre- implementation meeting to verify the project requirements, implementation instructions and warranty requirements.

.2 Documents to be submitted for quality control purposes

.1 Soil testing: Submit test reports certifying that the products, materials and equipment meet the requirements for physical characteristics and performance criteria.

.2 Certificates: Submit the documents signed by the manufacturer, certifying that the products, materials and equipment meet the requirements for physical characteristics and performance criteria.

### 1.7 Waste management and disposal

.1 Do not dispose of unused products, soil conditioners or unused materials into the sewer systems, lakes and streams, onto ground or in locations where it will pose health or environmental hazard.

## Part 2 PRODUCTS

### 2.1 Topsoil

.1 Type 1 topsoil for sodded areas: mixture of particulates, micro-organisms and organic matter that provides suitable medium for supporting intended plant growth.

.2 Type 2 soil is to be used for tree planting. It is a mineral soil favorable to the growth of trees.

.3 Soils shall be homogeneous, sifted and free of foreign matter, pebbles, lumps and woody debris exceeding 25 mm in diameter. They must also be free from foreign objects that could cause injury. They must meet the environmental quality criteria of all-purpose potting soil defined by the Quebec Ministry of the Environment.

.4 The presence of seeds and rhizomes in soils is not desirable; a germination test makes it possible to detect their presence.

.5 Physical and Chemical Characteristics of Soils

.1 Physical characteristics of soils

.1 Type 1 and Type 2 potting mixes must contain less than 30% of organic matter on a dry basis. The mineral part of the soil must conform to the following granulometry:

.1 From 80% to 90% of particles with a diameter between 0.002 mm and 2 mm, of which 10% to 20% of particles with a diameter of less than 0.05 mm (silt);

.2 From 0% to 8% of particles with a diameter of less than 0.003 mm (clay);

.3 From 0% to 5% of particles with a diameter between 2 mm and 25 mm (gravel).

.2 Soil compaction rate is approximately 25% (variable depending on organic matter content and application method).

.2 Chemical characteristics of soils

.1 Depending on the use of Type 1 and Type 2 soils, for sodding or planting trees, their chemical properties must comply with the requirements of the following table:

| Chemical properties | Type 1 Mineral soil for sodding | Type 2 Mineral soil for tree planting |
|---|---|---|
| Organic matter on a dry basis, % | ≥3 | ≥6 |
| pH water | from 6 to 7 | from 5,5 to 7 |
| Cation exchange capacity (CEC), meq/100 g | ≥7 | ≥10 |
| Electrical conductivity, mS/cm* | <3,5 | <3,5 |
| Phosphorus, mg/kg** | n.a. | >27 |
| Potassium, mg/kg** | n.a. | >71 |

* 1 millimho (mmho) = 1 millisiemens (mS). Salinity is determined by measuring the electrical conductivity. The method specifies that the salinity expressed in milligrams per kilogram is equal to the electrical conductivity expressed in 1 millisiemens (mS) multiplied by 700.
** 1 hectare (ha) = 1 square hectometer ($hm^2$). The conversion from milligrams per kilogram to kilograms per square hectometer is done by multiplying the milligrams per kilogram by a factor of 2.24)

## 2.2 Soil conditioners

.1 Fertilizer

.1 Fertility: major soil nutrients present in following amounts:

.2 Nitrogen (N): 20 to 40 micrograms of available Nitorgen per gram of topsoil.

.3 Phosphorus (P): 40 to 50 micrograms of phosphate per gram of topsoil.

.4 Potassium (K): 75 to 110 micrograms of potassium per gram of topsoil.

.5 Calcium, magnesium, sulfur and micro-nutrients present in balanced ratios to support germination and/or establishment of intended vegetation.

.6 pH value: 6.5 to 8.0.

.2 Peat moss

.1 Derived from partially decomposed species of Sphagnum Mosses.

.2 Elastic and homogeneous, brown in colour.

.3 Free of wood and deleterious material which could prohibit growth.

.4 Minimum shredded particle size: 5 mm.

.3 Sand: washed coarse silica sand, medium to course textured.

.4 Use composts meeting Category B requirements for land fill reclamation and large scale industrial applications.

.5 Limestone:

.1 Ground agricultural limestone.

.2 Gradation requirements (% passing by weight): 90% of limestone passing 1.0 mm sieve, 50% of limestone passing 0.125 mm sieve.

.6 Fertilizer: industry accepted standard medium containing nitrogen, phosphorous, potassium and other micro-nutrients suitable to specific plant species or application or defined by soil test.

**2.3 Source quality control**

.1 Notify the Engineer of the proposed sources of topsoil at least two (2) weeks before topsoil placement, to allow sufficient lead time for testing.

.2 The Contractor is responsible for amendments to supply topsoil as specified.

.3 The soil testing by a recognized testing facility for PH, P and K, and organic matter.

.4 The testing of topsoil will be carried out by testing laboratory designated by the Engineer.

.1 Soil sampling, testing and analysis are to be performed in accordance with the Provincial standards.

## Part 3 EXECUTION

**3.1 Temporary erosion and sedimentation control**

.1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways. These measures shall comply with the requirements

indicates on the drawings and in the specifications, as well as the local authorities having jurisdiction.

.2 Inspect, repair, and maintain erosion and sedimentation control measures until permanent vegetation has been established.

.3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during the construction work.

**3.2 Topsoil stripping**

.1 Remove topsoil to depth of 150 mm below finish grade or to a depth indicated by the Engineer.

.1 Avoid mixing topsoil with the subsoil if this may make the topsoil texture inconsistent with the acceptable parameters, given the intended use of the soil.

.2 Stockpile topsoil at areas pre-approved by the Engineer.

.1 Stockpile height not to exceed 2 m.

.3 Unused topsoil is not to be used in a landfill, but is to be disposed of in an environmentally responsible manner, in a location pre-approved by the Engineer. Protect stockpiles from contamination and compaction.

**3.3 Preparation of existing bedding soil**

.1 Verify that grades are correct.

.1 If discrepancies occur, notify the Engineer and do not begin work until instructed by the Engineer.

.2 Grade soil, eliminating uneven areas and low spots, ensuring a positive drainage.

.3 Remove debris, roots, branches, stones in excess of 50 mm in diameter and other deleterious materials.

.1 Remove soil contaminated with calcium chloride, toxic materials and petroleum products.

.2 Remove debris that protrudes more than 75 mm above surface.

.3 Dispose of removed material off-site.

.4 Loosen the soil of the entire area to receive topsoil to minimum a depth of 150 mm.

.1 Repeat the loosening of the soil operation crosswise over those areas where equipment used for hauling and spreading has compacted soil.

**3.4 Placing and spreading of topsoil and planting soil**

.1 Place topsoil after the Engineer has accepted the existing bedding soil.

.2 Spread topsoil in uniform layers not exceeding 150 mm.

.3 Keep topsoil 15 mm below finished grade in areas to be sodded.

.4 Spread topsoil as indicated to following minimum depths after settlement:

.1 150 mm for seeded areas

.2 150 mm for sodded areas

.5 Manually spread topsoil/planting soil around trees, shrubs and obstacles.

## 3.5 Finishing grading

.1 Grade to eliminate rough spots and low areas and ensure positive drainage.

.1 Prepare loose friable bed by means of loosening of the soil and subsequent raking.

.2 Consolidate topsoil to required density using equipment approved by the Engineer.

.1 Leave surfaces smooth, uniform and firm against deep footprinting.

## 3.6 Acceptance

.1 The Engineer shall inspect and test topsoil in place and determine the acceptance of the material, the depth of the topsoil and the finish grade.

## 3.7 Surplus materials

.1 Dispose of unrequired surplus materials, except topsoil, in location pre-approved by the Engineer.

## 3.8 Cleaning

.1 Progress cleaning: clean in accordance with Section 017100 – Cleaning.

.2 Upon completion, remove surplus materials, equipment, rubbish, tools and safety barriers.

**END OF SECTION**

## Part 1 GENERAL

### 1.1 Related sections

.1 Section 013400 – Shop drawings, product and sample descriptions

.2 Section 014100 – Testing laboratory services

.3 Section 015450 – Safety measures

.4 Section 015610 – Environmental protection

.5 Section 017100 – Cleaning

.6 Section 329119.13 – Topsoil placement and grading

### 1.2 Measurement for payment

.1 Costs relating to sodding are included in the prices for items entitled “Sod held by its own weight (including topsoil)” and “Hydroseeding” for which payment terms are set out in Section 012900 – Measurement for payment.

.2 This price applies to the following types of grass:

.1 Number 1 turf grass nursery sod

.2 Commercial grade turf grass nursery sod

.3 Sod analysis: Engineer will pay for cost of sodding analyses as specified in Section 014100 – Testing laboratories.

### 1.3 References

.1 Bureau of Standardization du Quebec

.1 NQ 605-30, Landscaping – Grass and seeding.

### 1.4 Action and informational submittals

.1 Submit submittals in accordance with Section 013400 – Shop drawings, product descriptions and samples.

.2 Technical data sheets

1. Submit the manufacturer's technical data sheets, instructions and documentation for sod, geotextile and fertilizer. Technical data sheets shall indicate the product characteristics, performance criteria, dimensions, finish and limitations.
2. Submit two (2) copies of material safety data sheets, required under WHMIS terms, in accordance with Sections 015450 – Safety measures and 013543 – Environmental protection.

.3 Samples

.1 Submit the following samples:

.1 Turf (one sample of the type used).

.2 Place approved turf samples in one (1) square metre mock-up and maintain in accordance with maintenance requirements during establishment period.

.2 Bio-degradable geotextile fabric.

.3 0.5-kg container of each type of fertilizer used.

.2 The samples are to be approved by the Engineer.

.4 Certificates: submit certificates signed by the manufacturer, certifying that the products, materials and equipment meet the requirements pertaining to physical characteristics and performance criteria for seed mixture, seed purity and sod quality.

Test reports: submit certificates signed by manufacturer, certifying that products, materials and equipment meet requirements pertaining to physical characteristics and performance criteria for seed mixture, seed purity and sod quality.

.5 Competencies

1. Landscaping contractor: member in good standing with the horticultural trades association.
2. Planting supervisor: landscaping technician certified in planting plants.
3. Landscaping maintenance supervisor: landscaping technician certified to maintain turfed surfaces.

## 1.5 Delivery, storage and handling

.1 Deliver, store and handle materials in accordance with the manufacturer’s recommendations.

.2 Delivery and acceptance requirements: deliver materials to the site in their original factory packaging, labelled with the manufacturer's name and address.

.3 Storage and handling

1. Store materials in accordance with the manufacturer’s recommendations.
2. Replace defective or damaged materials and equipment with new.

## Part 2 PRODUCTS

### 2.1 Materials

.1 Number one turf grass nursery sod: sod that has been especially sown and cultivated in nursery fields as turf grass crop.

.1 Turf grass nursery sod types:

1. Number one Kentucky Bluegrass sod: nursery sod grown solely from seed of cultivars of Kentucky Bluegrass, containing not less than 50% Kentucky Bluegrass cultivars.
2. Number one Kentucky Bluegrass / Fescue sod: nursery sod grown solely from seed mixture of cultivars of Kentucky Bluegrass and Chewing Fescue or Creeping Red Fescue, containing not less than 40% Kentucky Bluegrass cultivars and 30% Chewing Fescue or Creeping Red Fescue cultivars.
3. Number one named cultivars: nursery sod grown from certified seed.

.2 Turf grass nursery sod quality:

1. Grass containing no more than one (1) dicotyledonous seed (broadleaf weed) and up to 1% indigenous grasses per 40 square metres.
2. Density of sod sufficient so that no soil is visible from height of 1 500 mm when mown to height of 50 mm.
3. Mowing height limit: 35 to 65 mm.
4. Soil portion of sod: 6 to 15 mm in thickness.

.2 Specified sod type :

.1 Grass in rolls or Kentucky Blue sod. Composition of the mixture:

- 30 % Kentucky Bluegrass « Julius »
- 30 % Kentucky Bluegrass « Washington »
- 20 % Kentucky Bluegrass « Regent »
- 20 % Kentucky Bluegrass « Shamrock »

.3 Water: T he Contractor is responsible for its water supply. He must obtain the necessary authorizations or agreements.

.4 Fertilizer: Granular fertilizer 1-2, 5-1.

### 2.2 Source quality control

.1 Obtain the written approval from the Engineer of sod at source.

.2 When proposed source of sod is approved, use no other source without the written authorization from the Engineer.

## Part 3 EXECUTION

### 3.1 Installers

.1 Use installers who are members in good standing with the horticultural trades association.

### 3.2 Examination

.1 Verification of conditions: before placing sod, verify conditions of substrates previously placed under other sections or contracts are acceptable for sod placement in accordance with the manufacturer's written instructions.

.2 Visually inspect surfaces/supports in the presence of the Engineer.

.3 Inform the Engineer of unacceptable conditions immediately upon discovery.

.4 Proceed with installation only after unacceptable conditions have been remedied and after the reception of the Engineer’s written approval to proceed.

### 3.3 Preparation work

.1 Verify that grades are adequate and prepared in accordance with Section 329119.13 – Topsoil placement and grading.

.2 Do not perform work under adverse field conditions such as frozen soil, excessively wet soil or soil covered with snow, ice, or standing water.

.3 Fine grade surface free of humps and hollows to smooth, even grade, to contours elevations indicated, to tolerance of plus or minus 8 mm, favouring natural surface drainage.

.4 Remove weeds, debris, stones 50 mm in diameter and larger, as well as soil contaminated by oil, gasoline and other deleterious materials, and dispose of off-site in a location approved by the Engineer in accordance with Section 329119.13 – Topsoil placement and grading.

### 3.4 Sod placement

.1 Ensure sod is placed under the supervision of a certified planting supervisor.

.2 Lay sod within 24 hours of being lifted if air temperature exceeds 20 degrees Celsius.

.3 Lay sod sections in rows, joints staggered. Butt sections closely without overlapping or leaving gaps between sections. Cut out irregular or thin sections with sharp tools.

.4 Provide close contact between sod and soil by light rolling. Use of heavy roller to correct irregularities in grade is not permitted.

**3.5 Protective barriers**

.1 Protect newly sodded surfaces from deterioration by preventing access to newly sodded areas.

.2 Remove protection two (2) weeks after placement, as directed by the Engineer.

**3.6 Maintenance during establishment period**

.1 Perform following operations from time of installation until the time of the acceptance of the work.

.1 Water sodded areas in sufficient quantities and at frequency required to maintain optimum soil moisture condition to a depth of 75 to 100 mm.

.2 When grasses reaches height of no more than 75 mm, mow to height of 50 mm.

.3 Maintain sodded areas 95% weed free.

.4 Keep barriers or temporary signage in locations as necessary to protect the newly established grass.

**3.7 Acceptance of work**

.1 Turf grass nursery sod areas will be accepted by the Engineer provided that:

.1 Sodded areas are properly established.

.2 Sodded areas are free of bare and dead spots.

.3 No surface soil is visible from height of 1500 mm when grass has been cut to height of 50 mm.

.4 Sodded areas have been cut a minimum of two (2) times prior to the acceptance of work.

.2 Sodded commercial grade turf grass nursery sod areas will be accepted by the Engineer provided that:

.1 Sodded areas are properly established.

.2 Extent of surface soil visible when grass has been cut to height of 60 mm is acceptable.

.3 Sod is free of bare or dead spots and extent of weeds visible in grass is acceptable.

.3 When environmental conditions permit, all turfed surfaces showing cracks due to contraction shall be re-soiled and seeded with a seed mixture the same as the original.

.4 Areas sodded in the fall will be accepted in the following spring, one (1) month after the start of the growing season, provided the aforementioned conditions are fulfilled.

**3.8 Maintenance during the warranty period**

.1 Perform the following maintenance work from the date of the reception of the work until the end of the warranty period.

.1 Water the cultivated turf areas weekly to maintain optimum moisture content in the lawn to a depth of 100 mm.

.2 Repair and re-grass bare areas and dead grass areas to the satisfaction of the Engineer.

.3 Mow the lawn to the height indicated below and remove debris from mowing that could smother the turf areas as directed by the Engineer.

.1 Cultivated turf

.1 Mow at a height of 50 mm during the normal growth period.

5. Mow the grass every two (2) weeks; the gap between the clippings shall reduce by one third the height of the grass in one cut.

6. Spread fertilizer on turf areas in accordance with established fertilizer program. Apply half of the required amount of fertilizer in one direction, then spread the rest perpendicularly; water well to penetrate the fertilizer into the soil.

7. Eliminate weeds mechanically in a proportion acceptable to the Engineer.

**END OF SECTION**

## Part 1 GENERAL

### 1.1 Related requirements

.1 Section “011100 – Summary of Works”.

.2 Section “310000.01 – Earthwork”.

.3 Section “32119.13 – Topsoil Placement And Grading”.

.4 Tender Form.

### 1.2 Reference standards

.1 Agriculture and Agri-Food Canada (AAFC).

.1 Plant Hardiness Zones in Canada-2000.

.2 Canadian Nursery Landscape Association (CNLA)

.1 Canadian Standards for Nursery Stock-2017.

.3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (SDS).

.4 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.

### 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: Submit the work schedule to the Engineer, for review, seven (7) days before delivery of the plants.

.2 The work schedule shall indicate the following information:

.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 “013400 - Shop Drawings, Product and Sample Descriptions”.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for trees, shrubs, ground cover, fertilizer, mycorrhiza, anti-desiccant, anchoring equipment, and coconut fiber mulch and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit two (2) copies of WHMIS SDS in accordance with Section “013543 - Environmental Procedures”.

.3 Samples:

.1 Submit samples of the coconut fiber mulch and mycorrhiza.

## 1.6 Quality assurance

.1 Qualifications:

.1 Landscape Contractor: to be a Member in Good Standing of the *Association des Paysagistes Professionnels du Québec* (APPQ).

.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 “016000 - 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 where practical.

.3 Protect foliage and root balls using anti-desiccants 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 four (4) hours in accordance with supplier's written recommendations and after arrival at site in storage location approved by the Engineer.

.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.

.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.

### 1.8 Warranty

.1 For plant material as itemized on plant list the 12 months warranty period is extended to 24 months.

.2 End-of-warranty inspection will be conducted by the Engineer.

.3 The Engineer reserves the right to extend the Contractor's warranty responsibilities for an additional one (1) 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, according to hardiness zones for plants of Canada.

.2 The plants shall belong to species suitable for the hardiness zone of the land where they are to be planted

.3 Plants shall belong to species suitable for the location where they are intended.

.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 Bare root stock: nursery grown, in dormant stage, not balled and burlapped or container grown.

.5 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.

.1 During collection, ensure 10 % maximum seed crop (or plants) are collected from healthy population of many individuals, and from several plants of same species.

.2 Leave remainder for natural dispersal and as food for dependent organisms.

**2.2 Water**

.1 Free of impurities that would inhibit plant growth.

**2.3 Stakes**

.1 T-bar, steel, 40 x 40 x 5 x 2440 mm.

**2.4 Mulch**

.1 Shredded wood: varying in size from 25 mm to 125 mm in length, from coniferous trees.

**2.5 Fertilizer**

.1 Synthetic commercial type as recommended by the manufacturer’s recommendations.

.1 Ensure new root growth is in contact with mycorrhiza.

.2 Use mycorrhiza as recommended by manufacturer's written recommendations.

**2.6 Anti-desiccant**

.1 Wax-like emulsion.

**2.7 Source quality control**

.1 Obtain approval of plant material, from the Engineer, prior to planting.

.2 Imported plant material shall be accompanied with necessary permits and import licenses. 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 in accordance with manufacturer's written instructions.

.1 Visually inspect substrate in presence of the Engineer.

.2 Inform the Engineer of unacceptable conditions immediately upon discovery.

.3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from the Engineer.

## 3.2 Pre-planting preparation

.1 Proceed only after receipt of written acceptability of plant material from the Engineer.

.2 Remove damaged roots and branches from plant material.

.3 Apply anti-desiccant to conifers and deciduous trees in leaf in accordance with manufacturer's instructions.

.4 Locate and protect public utilities and electrical supply conduits.

.5 Notify and acquire written acknowledgement from utility authorities before beginning excavation of planting pits for trees and shrubs.

.6 Temporary Erosion and Sedimentation Control:

.1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.

.2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

.3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

## 3.3 Excavation and preparation of planting beds

.1 Establishment of sub-grade for planting beds in accordance with Section “312213 - Rough Grading”.

.2 Preparation of planting beds in accordance with Section “310000.01 – Earthwork and related work”.

.3 For individual planting holes:

.1 Stake out location and obtain approval from the Engineer 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 hole.

.5 Remove water which enters excavations prior to planting. Notify the Engineer if water source is ground water.

## 3.4 Planting

.1 For bare root stock, place 50 mm backfill soil in bottom of hole.

.1 Plant trees and shrubs with roots placed straight out in hole.

.2 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.

.3 For container stock or root balls in non-degradable wrapping, remove entire container or wrapping without damaging root ball.

.4 Plant vertically in locations as indicated.

.1 Orient plant material to give best appearance in relation to structure, roadways and walkways.

.5 For trees and shrubs:

.1 Backfill soil in 150 mm lifts.

.1 Tamp each lift to eliminate air pockets.

.2 When two thirds of depth of planting pit has been backfilled, fill remaining space with water.

.3 After water has penetrated into soil, backfill to finish grade.

.2 Form watering saucer as indicated.

.6 For ground covers, backfill soil evenly to finish grade and tamp to eliminate air pockets.

.7 Water plant material thoroughly.

.8 After soil settlement has occurred, fill with soil to finish grade.

## 3.5 Mulching

.1 Ensure soil settlement has been corrected prior to mulching.

.2 Spread mulch as indicated.

## 3.6 Maintenance during establishment period

.1 Perform following maintenance operations from time of planting to acceptance by the Engineer.

.1 Water to maintain soil moisture conditions for optimum establishment, growth and health of plant material without causing erosion.

.1 For evergreen plant material, water thoroughly in late fall prior to freeze-up to saturate soil around root system.

.2 Remove weeds monthly.

.3 Replace or respread damaged, missing or disturbed mulch.

.4 For non-mulched areas, cultivate as required to keep top layer of soil friable.

.5 If required to control insects, fungus and disease, use appropriate control methods in accordance with Federal, Provincial and Municipal regulations. Obtain product approval from the Engineer prior to application.

.6 Remove dead or broken branches from plant material.

.7 Keep trunk protection and guy wires in proper repair and adjustment.

.8 Remove and replace dead plants and plants not in healthy growing condition. Make replacements in same manner as specified for original plantings.

**3.7 Maintenance during warranty period**

.1 From time of acceptance by the Engineer 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 Reform damaged watering saucers.

.3 Remove weeds monthly.

.4 Replace or respread damaged, missing or disturbed mulch.

.5 For non-mulched areas, cultivate monthly to keep top layer of soil friable.

.6 If required to control insects, fungus and disease, use appropriate control methods in accordance with Federal, Provincial and Municipal regulations. Obtain product approval from the Engineer prior to application.

.7 Apply fertilizer in early spring as indicated by soil test.

.8 Remove dead, broken or hazardous branches from plant material.

.9 Keep trunk protection and tree supports in proper repair and adjustment.

.10 Remove trunk protection, tree supports and level watering saucers at end of warranty period.

.11 Remove and replace dead plants and plants not in healthy growing condition. Make replacements in same manner as specified for original plantings.

.12 Submit monthly written reports to the Engineer identifying:

.1 Maintenance work carried out.

.2 Development and condition of plant material.

.3 Preventative or corrective measures required which are outside the Contractor's responsibility.

## 3.8 Cleaning

.1 Progress Cleaning: clean in accordance with Section “017411 – 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 “017411 – Cleaning”.

.3 Waste Management: separate waste materials for recycling in accordance with Section “017419 - Waste Management and Disposal”.

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

.2 Divert discarded burlap, wire and plastic plant containers materials from landfill to plastic recycling facility approved by the Engineer.

.3 Dispose of unused fertilizer at official hazardous material collection site approved by the Engineer.

.4 Dispose of unused anti-desiccant at official hazardous material collections site approved by the Engineer.

.5 Divert unused wood and mulch materials from landfill to composting/recycling facility approved by the Engineer.

## 3.9 Closeout activities

.1 Submit maintenance reports for trees, shrubs, and other plantings.

**END OF SECTION**