

REHABILITATION OF FRYER'S CONTROL DAM ON RICHELIEU RIVER

(897-01) – DEMOLITION OF CONCRETE DECK

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END OF SECTION

Partie 1 General**1.1 RELATED REQUIREMENTS**

- .1 Not used

1.2 SUMMARY OF WORKS

- .1 The Contractor must respect all archaeological monitoring clauses indicated in point 1.3.

1.3 ARCHAEOLOGICAL CLAUSES

- .1 Special Conditions:
 - .1 The Canadian National Historic Site of Fryer's Dam was recognized by the Canadian government as one of the sites with the highest heritage value. Therefore, all excavation work recognized as potentially containing historical remains or ruins should be monitored by an Archaeologist appointed by Parks Canada Agency. The excavation works required for the construction of the access ramps, the planning and landscaping work of access path and mobilization zones, are therefore subject to this section of the specifications.
- .2 Access and Collaboration:
 - .1 The Contractor must cooperate and comply with all instructions given by the Departmental Representative during excavation works to avoid any loss of archaeological information on the site.
 - .2 The Contractor must facilitate access to the work site and collaborate with the Archaeologist. The Archaeologist or his representative will be based on site as required related to the protection and recording of the historical remains. Their role will be to guide the Contractor to avoid loss of archaeological information and to gather information on the remains.
 - .3 The Contractor must allow the team of archaeologists to conduct examinations and archaeological surveys.
- .3 Archaeological Discoveries
 - .1 The Contractor must notify the Departmental Representative or, in his absence, the Archaeologist or his representative of any archaeological discovery (remains of buildings or facilities, objects, and fragments of objects) made on the premises and wait for his written instructions before continuing work in the area of the discovery.
 - .2 Relics, antiques, and other items with some interest from a historical, archaeological, or scientific point of view (remains, object, or fragment of an object) found on the site or in the areas of excavation or demolition remain the property of the Crown. The Contractor must protect and obtain instructions from the Departmental Representative in this regard.

.4 Suspension of Work:

- .1 The Contractor must provide in his contract, at his expense, the suspension of work for five (5) minutes per hour of excavation in all areas requiring the presence of the Archaeologist (as described in section 1.3.1 this section). These work stoppages, if not used, will be accumulated and can be reused later as needed. A list of the unused time will be recorded by the Departmental Representative or his representative in agreement with the Contractor and the Archaeologist.
- .2 For work stoppages lasting more than 30 minutes, the Departmental Representative will assess the implications of the stoppage and notify the Contractor to that effect. The Contractor may be required to move the machinery to another area to allow the continuation of the archaeologists' work. If reassignment is not possible, the Contractor will be compensated from the bank of hours or if it is used up, according to the agreements made at the first site meeting.

.5 Manual Excavations for Archaeological Purposes:

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

.6 Protection of Relics and Structures:

- .1 The Contractor must take all reasonable precautions during excavation and other works to protect the excavated remains and to allow their examination by the Archaeologists. Parks Canada Agency will not tolerate any exception in this regard. If by neglect the Contractor deteriorates any relic whatsoever, he will be held responsible and the Department will determine the implications.
- .2 In the event where the Departmental Representative authorizes the demolition of materials on site, the Contractor must take all necessary precautions to ensure protection of the adjacent structures that are not to be demolished. The demolition of materials must be carried out gradually and in a controlled manner after the archaeological surveys have been completed. If items are damaged during construction works, immediately notify the Departmental Representative.

END OF SECTION

Part 1 General**1.1 RELATED SECTIONS**

- .1 None

1.2 REFERENCES

- .1 Quebec Highway Safety Code, latest version;
- .2 Safety Code for the Construction Industry, latest version;
- .3 Tome V – Road signs, volumes 1 and 2, from the Quebec Ministry of Transport (MTQ), highway construction standards series (Normes – Ouvrages routiers), latest version – hereafter referred to as Tome V;
- .4 Tome I – Highway design, from the Quebec Ministry of Transportation highway construction standards series, latest version – hereafter referred to as Tome I;
- .5 Tome II – Highway construction, from the Quebec Ministry of Transportation highway construction standards series, latest version – hereafter referred to as Tome II;
- .6 Tome III – Civil engineering structures, from the Quebec Ministry of Transportation highway construction standards series, latest version – hereafter referred to as Tome III;
- .7 Tome VII – Materials, from the Quebec Ministry of Transportation highway construction standards series, latest version – hereafter referred to as Tome VII;
- .8 Tome VIII – Crash Cushions, from the Quebec Ministry of Transportation highway construction standards series, latest version – hereafter referred to as Tome VIII;
- .9 Highway construction site safety action plans (*Plans d'action en matière de sécurité sur les sites de travaux routiers*), 2007 season and latest version.
- .10 The Contractor is advised that the table titled ***Échéances à respecter pour la mise aux normes des dispositifs de signalisation (deadlines for standards compliance of traffic-control devices) in Tome V, volumes 1 and 2***, is not valid for this contract. The Contractor must therefore adhere to the signalling standards in effect at the date on which bidding opens, within the timeframe specified in the above-mentioned table.

1.3 EXTENT OF TEMPORARY SIGNAGE WORK

- .1 The Work, without limitation, is to provide and implement the temporary signage necessary to maintain traffic flow and to ensure the protection of workers during Planning and rehabilitation Richelieu river banks and concrete deck demolition of Fryer's Dam, and during all related works specified in the contract documents.

- .2 Work covered by the present document includes, without being limited to:
 - .1 Preparation of all traffic signage plans;
 - .2 Supply, installation, maintenance, relocation, replacement, commissioning or decommissioning and removal of temporary traffic signs and signals, all of which is to be done in compliance with the requirements stated in the present document;
 - .3 Maintenance of signage and of traffic lanes;
 - .4 Production, installation, maintenance, relocation, replacement, commissioning or decommissioning and removal of special panels;
 - .5 Erasure and marking of pavement, when required;
 - .6 Temporary signage and all equipment and labour required for the complete performance of the work described above;
 - .7 And other work required for the complete execution of the project in an environment safe for drivers, pedestrians, workers and neighbours, and related work required for completion of the work covered by the present contract.
- .3 Parks Canada Agency may request that additional temporary traffic signage work be done in order to ensure the safety of workers and road users or to improve traffic flow.

1.4 LOCATION

- .1 The temporary signage works are located on both side of Fryer's Dam, on Fryer's Island, in the city of Carignan and Richelieu.
- .2 However, the Contractor may be required to work in a larger territory for the installation of peripheral sign panels or for all of the other work described in the tender documents.

1.5 CLAIMS AND COMPLAINTS

- .1 Any claim or complaint from a road user must be received with courtesy. The Contractor must advise the Departmental Representative of such complaints and keep the Departmental Representative apprised of follow-up action.
- .2 The Contractor and the Departmental Representative are to collate all relevant information so that Parks Canada Agency can perform its own analysis and follow-up, if necessary.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 02 41 16 – DEMOLITION OF STRUCTURES
- .2 Section 31 00 99 – EARTHWORK FOR MINOR WORKS
- .3 Section 31 11 00 – CLEARING AND GRUBBING
- .4 Section 31 23 33.01 – EXCAVATING TRENCHING AND BACKFILLING
- .5 Section 32 91 19.13 – TOPSOIL PLACEMENT AND GRADING
- .6 Section 32 92 19.16 – HYDRAULIC SEEDING

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- .1 The Work covered by this contract includes and are not limited to: mobilisation, demobilisation, banks planning, demolition of concrete deck including paving and all components fixed to the concrete deck. Provide maritime access structures, and required equipment and labour to complete works as specified in plans and specs.

1.3 CONTRACT METHOD

- .1 Demolition Work under lump-sum contract and unit price contract, in accordance with the articles presented in the Tender Form.

1.4 WORK BY OTHERS

- .1 Not used.

1.5 WORK SEQUENCE**.1 Deadlines**

- .1 The works under this contract including planning of banks, lands and paths used by the contractor must be completed entirely 30 weeks after holding the kick-off meeting or 32 weeks after the receipt of the award letter following the earlier of these two dates.
- .2 The final demobilization must be completed five (5) working days after completion dates on the previous paragraph or fifteen (15) opening day after the acceptance by the owner of the declaration of substantial completion of works, following the earlier of these two dates.

.2 Scheduling**.1 Construction Facilities**

- .1 At the kick-off meeting, the Contractor must submit the Construction Facilities Layout Plan to the Departmental Representative for approval.

- .1 In the five (5) days following of submittal of the layout plan, the Departmental Representative shall return to the Contractor a reviewed copy of the plan, along with any comments.
- .2 Within five (5) days following the acceptance of the Construction Facilities Layout Plan, the Contractor shall have completed the installation of the construction trailers.

.2 Planning Richelieu River banks and concrete deck demolition of Fryer's Dam

- .1 Within five (5) days following the approval of the shop drawings, begin planning Richelieu River banks.
- .2 Within ten (10) days following the approval of the shop drawings, begin demolition of concrete deck of Fryer's Dam.
- .3 At the kick-off meeting, the Contractor must submit to the Departmental Representative the Work Sequence for the demolition work with a justification for each phase of the works.
 - .1 The Work Sequence shall be prepared by prioritizing certain works over the completion of other works, in favour of the execution time.
 - .2 In the five (5) days following the submittal of the Work Sequence for the restoration works, the Departmental Representative will return to the Contractor a reviewed copy of the document, along with any comments.
- .4 At the kick-off meeting, the Contractor must submit to the Departmental Representative the Construction Schedule, taking into account the information contained in the Work Sequence.
 - .1 Prepare the Schedule in accordance with the timeframes specified in this section of the specification.
 - .2 In the five (5) days following the submittal of the Schedule, the Departmental Representative shall return to the Contractor a reviewed copy of the schedule, along with any comments.
- .5 Perform all Demolition works in accordance with the Work Sequence and the Schedule approved by the Departmental Representative.
- .6 At the kick-off meeting, submit to the Departmental Representative the Temporary Signage Boards for traffic management during the execution of the demolition works.
 - .1 In the five (5) days following the submittal of the Temporary Signage Boards for traffic management, the Departmental Representative shall return to the Contractor a reviewed copy of the boards, along with any comments.
 - .2 Within five (5) days following the acceptance of Temporary Signage Boards, the Contractor shall have completed the installation of these boards on the site.

- .7 At the kick-off meeting, submit to the Departmental Representative the shop drawings of the Temporary Access System for the execution of the demolition works.
 - .1 In the five (5) days following the submittal of the Temporary Access System shop drawings, the Departmental Representative shall return to the Contractor a reviewed copy of the drawings, along with any comments.
 - .2 Immediately after having received the acceptance of the Temporary Access System shop drawings, and once the temporary signage has been installed and approved by the Departmental Representative, the Contractor shall implement the Temporary Access System on the site.
- .8 At the kick-off meeting, submit to the Departmental Representative the shop drawings required for the execution of the demolition works.
 - .1 In the five (5) days following the submittal of the shop drawings, the Departmental Representative shall return to the Contractor a reviewed copy of the drawings, along with any comments.
 - .2 Within five (5) days following the acceptance of the shop drawings, the Contractor shall deliver the necessary materials to the site.

1.6 INSTRUCTIONS TO THE CONTRACTOR

- .1 By accepting this Contract, the Contractor accepts all the responsibilities normally assigned to the Prime Contractor under the workplace health and safety regulations. Before starting the works, the Contractor must perform the following activities:
 - .1 Submit to the Departmental Representative a Health and Safety Plan and a mechanical inspection certificate for each piece of machinery used on site.
 - .2 Ensure that workers on the site have received the training and information required to perform the work safely and that all required tools and protective equipment are available, in compliance with all standards, laws, and regulations.
 - .3 Comply at all times with the provisions of the occupational health and safety regulations and safety codes of the province of Quebec: "*Loi sur la santé et sécurité du travail*" (LSST) and the "*Code de sécurité pour les travaux de construction*" (CSTC).
 - .4 Inform your employees of their right to refuse any work that is dangerous to their health or safety.
 - .5 Identify and barricade the work area and control access to the site.
 - .6 In the case of an unforeseen incident, take all necessary measures, including stopping work, to protect the health and safety of the workers and the public, and immediately contact the Departmental Representative.
- .2 Construct Work so as to provide for continuous public usage. Maintain access to the public places as long as an alternative has not been developed when the progress of the works is an impediment to the free movement of the public.

1.7 CONTRACTOR USE OF PREMISES

- .1 The work area identified can be used continuously until substantial completions, except during the restriction period, refer to environmental study. Use of each mobilization zone must be clarified in the development plan.
- .2 The use of the premises is restricted to the areas necessary for the execution of the work and those areas made available to the Contractor for the installation of the Construction Facilities and for the storage of the equipment and materials required for the works.
- .3 Coordinate use of premises under direction of the Departmental Representative.
- .4 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.
- .5 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by the Departmental Representative.
- .6 At completion of operations, the condition of existing work must be equal to or better than that which existed before new work started.

1.8 OWNER OCCUPANCY

- .1 Owner will occupy premises located inside the construction zone (Fryer's Island, bike path, access path etc.) during entire construction period for execution of normal operations.
- .2 Co-operate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.

1.9 PARTIAL OWNER OCCUPANCY

- .1 Not used

1.10 PRE-PURCHASED EQUIPMENT

- .1 Not used.

1.11 OWNER FURNISHED ITEMS

- .1 Not used.

1.12 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

- .1 Not used.

1.13 EXISTING SERVICES

- .1 Submit schedule to and obtain approval from the Departmental Representative at least seven (7) days in advance for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.
- .2 Provide alternative routes for pedestrian and vehicular traffic.

- .3 Establish location and extent of service lines in area of work before starting Work. Notify Departmental Representative of findings.
- .4 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.
- .5 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.
- .6 Record locations of maintained, re-routed, and abandoned service lines.
- .7 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.
- .8 Know existing services are available in appendix, for information. The contractor is still responsible for locating and protecting existing services.

1.14 DOCUMENTS REQUIRED

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

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 NOT USED

- .1 Not used.

END OF SECTION

Part 1 General**1.1 REFERENCES**

- .1 Not used.

Part 2 Explanation of the Bid Form prices**2.1 Item 1. – Site Organisation**

- .1 Item 1.1 – Construction Facilities, general expenses, mobilisation and demobilisation
 - .1 The line item 1.1 of the Bid Form is a fixed lump sum amount to compensate all necessary expenses incurred in the execution of the works as well as any other expenses not included in the other Bid Form items, in accordance with the requirements of the specifications.
 - .2 The amount includes, but is not limited to, the following:
 - .1 All that is described in Section 01 52 00, CONSTRUCTION FACILITIES, such as site offices, access roads, platforms, walkways, barges, sanitation facilities, fencing, electricity, water, lighting, furniture, telephone and related services (internet, pagers, fax machine, etc.), heating and ventilation of site offices and storage facilities, scaffolding, construction and maintenance panels, in accordance with the requirements of the specifications and drawings, and as directed by the Departmental Representative.
 - .2 Shop drawings.
 - .3 Construction of a temporary access path by backfilling the canal or any other methods.
 - .4 Dismantling and reinstallation of the security concrete wall on both side of the dam.
 - .5 The required coordination with the Municipality and other stakeholders, including obtaining all necessary permits to carry out the work.
 - .6 The maintenance of the worksite and of its access routes.
 - .7 All that is required in the following sections and is not directly attributed or related to one of the other items of the Bid Form:

Section 01 31 19	PROJECT MEETINGS
Section 01 35 29.06	HEALTH AND SAFETY REQUIREMENTS
Section 01 52 00	CONSTRUCTION FACILITIES
Section 01 74 11	CLEANING
Section 01 74 21	CONSTRUCTION/DEMOLITION WASTE MANAGEMENT AND DISPOSAL
 - .8 All costs associated with surveying and staking the works and all other site take-offs and measurements that are not allocated to any of the other items of the Bid Form.

- .9 The costs of providing a security guard or other means of supervision for the site (if required).
- .10 Rental costs of land and/or space for the storage of materials.
- .11 The protection of existing public utilities on the bridges within the work site during construction. When required, this protection includes the removal and reinstallation of the street lampposts, of their underground conduits and cables, and of their foundation pads. If the Contractor damages these installations during his work, he must replace them at his expense.
- .3 A portion equal to 20 % of the total amount bid for this item will be paid with the first progress claim, provided that the work has begun.
- .4 Other progress payments under this item will be paid to a percentage consistent with the general progress of work for each progress claim period.
- .2 Item 1.2 – Environmental Protection Measures
 - .1 The line item 1.2 of the Bid Form is a fixed lump sum amount to compensate all necessary expenses incurred for measures to protect the environment in accordance with the requirements of the specifications.
 - .2 The amount includes, but is not limited to, the following:
 - .1 All that is described in Section 01 35 43, *Environmental Procedures* such as the preparation, presentation, and implementation of the environmental protection plan; the preparation, presentation, and implementation of the emergency spill plan; the preparation, presentation, and implementation of the construction facilities location plan location; the preparation, presentation, and implementation of the work zone plans; the preparation, presentation, and implementation of the air pollution prevention plan; the preparation, presentation, and implementation of the contamination prevention plan; the preparation, presentation, and implementation of the wastewater management plan; the preparation, presentation, and implementation of the plan for the designation and protection of wetlands and historical, archaeological, cultural, and biological resources; plant protection measures; temporary facilities for pollution prevention; the preparation, presentation, and implementation of a plan to protect the historical and heritage character of the site.
 - .3 A portion equal to 20 % of the total amount bid for this item will be paid with the first progress claim, provided that the work is begun.
 - .4 Other progress payments under this item will be paid to a percentage consistent with the general progress of work for each progress claim period.
- .3 Item 1.3 – Winter Conditions
 - .1 The line item 1.3 of the Bid Form is a fixed lump sum amount to compensate all necessary expenses incurred for measures to work in winter conditions, in accordance with the requirements of the specifications and drawings and as directed by the Departmental Representative.
 - .2 The amount includes, but is not limited to, the following:

- .1 Preparation, presentation, and correction, if required, to the description of the facilities.
- .2 The mobilization of labour, tools, and equipment required to carry out the work;
- .3 Supply, handling, and transport of materials needed to build the facilities;
- .4 Installation, maintenance during construction, and dismantling of the temporary facilities upon completion of the work;
- .5 The heating of temporary facilities, during the performance of work.
- .6 Transport off-site of the materials;
- .7 Any incidental expenses.
- .3 The winter condition is payable only if it is required, in writing, by the Departmental Representative.
- .4 The bid price is paid as follows:
 - .1 60% of the amount after the installation of the shelter to the satisfaction of the Departmental Representative;
 - .2 40% of the amount after the off-site disposal of the shelter's materials.

2.2**Item 2. – Demolition and planning**

- .1 Items 2.1 – Barges, platforms, and other devices
 - .1 Line items 2.1 of the Bid Form is a fixed lump sum amount to compensate all necessary expenses incurred in the barges, platforms, and other access devices, in order to allow access and execution works at the work zone as well as for recovering debris and evacuation of these debris off-site, in accordance with the requirements of the specifications.
 - .2 The amount includes, but is not limited to, the following:
 - .1 The engineering including the production of shop drawings, procedures, and attestation of conformity
 - .2 All requires devices to avoid any falling debris in the Richelieu River;
 - .3 Fabrication, transport, construction, installation, maintenance, displacement and evacuation of barges, platforms and other devices;
 - .4 All costs related to towing activities
 - .5 All costs relating to maritime traffic
 - .6 Any incidental expenses.
 - .3 A portion equal to 20 % of the total amount bid for this item will be paid with the first progress claim, provided that the work is begun.
 - .4 Other progress payments under this item will be paid to a percentage consistent with the general progress of work for each progress claim period.
- .2 Items 2.2 – Concrete Demolition
 - .1 The line items 2.2 of the Bid Form is a unit price per span of concrete deck to compensate all necessary expenses incurred for the demolition of the concrete

deck, and stairs located on the abutment, in accordance with the requirements of the specifications and drawings.

- .2 The amount includes, but is not limited to, the following:
 - .1 Preparation, presentation, and correction, if required, of the Work Plan regarding the demolition work;
 - .2 The mobilization of labour, tools, and equipment required to carry out the work;
 - .3 The displacement, manipulation, sorting, transport of materials offsite;
 - .4 Continuous collection and removal of demolition materials and debris, offsite.
- .3 Other progress payments under this item will be paid to a percentage consistent with the general progress of work for each progress claim period.

2.3

Landscaping on both side of the Richelieu River

- .1 Items 2.3.1 – Landscaping on the side of the Richelieu's City
 - .1 Line items 2.3.1 of the Bid Form is fixed lump sum price to compensate all necessary expenses for the planning, landscaping and development on the mobilisation zone, on the side of Richelieu's City, in accordance with the requirements of the specifications and drawings, and as directed by the Departmental Representative.
 - .2 The amount includes, but is not limited to, the following:
 - .1 Preparation and presentation of shop drawings and working procedures
 - .2 Clearing, Grubbing, cleaning of the mobilization zone and evacuation of debris. Consider approximately, removal of minimum 10 big trees with 4meter height and 650mm diameter;
 - .3 Excavation of an access ramp to the Richelieu River, at the downstream side of the dam.
 - .4 Providing, installation removal and disposal of access paths, ramp, and working platforms, built with granular materials.
 - .5 Providing, installation, removal and disposal of concrete, or galvanized steel conduits, to allow drainage of existing pit.
 - .6 Restoration and distribution of topsoil on areas affected by contractor works
 - .7 The planting of ten (10) trees on the clearing area around the River bank, as directed by the departmental representative. (trees with 100mm of diameter measured at 1200mm from the ground. Local tree species selected, to be approved by the Departmental Representative).
 - .3 The lump sum price bid for this item is payable as follow:
 - .1 50% of the lump sum amount is payable when the contractor has entirely completed the planning works.
 - .2 50% of the amount will be paid when the contractor has completely removed the temporary devices and has completing the landscaping and seeding to the satisfaction of the departmental representative.
- .2 Items 2.3.1 – Landscaping on the side of Fryer's Island

- .1 Line items 2.3.1 of the Bid Form is fixed lump sum to compensate all necessary expenses for the planning, landscaping and development on the mobilisation zone, on the side of Fryer's Island, in accordance with the requirements of the specifications and drawings, and as directed by the Departmental Representative.
- .2 The amount includes, but is not limited to, the following:
 - .1 Preparation and presentation of shop drawings and working procedures
 - .2 Clearing, Grubbing, cleaning of the mobilization zone and evacuation of debris. Consider approximately, removal of minimum 10 big trees with 4meter height and 650mm diameter;
 - .3 Excavation of an access ramp to the Richelieu River, at the upstream side of the dam.
 - .4 Providing, installation removal and disposal of access paths, ramp, and working platforms, built with granular materials.
 - .5 Providing, installation, removal and disposal of concrete, or galvanized steel conduits, to allow drainage of existing pit.
 - .6 Restoration and distribution of topsoil on areas affected by contractor works
 - .7 The planting of ten (10) trees on the clearing area around the River bank, as directed by the departmental representative. (trees with 100mm of diameter measured at 1200mm from the ground. Local tree species selected to be approved by the Departmental Representative).
- .3 The lump sum price bid for this item is payable as follow:
 - .1 50% of the lump sum amount is payable when the contractor has entirely completed the planning works.
 - .2 45% of the amount will be paid when the contractor has completely removed the temporary devices and has completing the landscaping and seeding to the satisfaction of the departmental representative.

2.4 Item 3 – Traffic and Signage

- .1 Item 3.1 – Traffic Maintenance and Temporary Signage
 - .1 The line item 3.1 of the Bid Form is fixed lump sum amount to compensate all necessary expenses for the maintenance and upkeep of traffic and temporary signage, in accordance with the requirements of the specifications and drawings, and as directed by the Departmental Representative.
 - .2 The amount includes, but is not limited to, the following:
 - .1 Traffic maintenance and temporary signage;
 - .2 The preparation of all signing plans;
 - .3 The preparation of closure requests;
 - .4 Provision of all personnel assigned to signage, including the manager responsible for signage, the construction site manager, and of all machinery and vehicles required for the temporary signage;
 - .5 The mobilization of access routes to work areas, their maintenance and dismantling;

- .6 Maintaining access to properties;
 - .7 Providing signalers for traffic management with cyclists and both entrance and exit of the traffic zone;
 - .8 Supply, mobilization, maintenance, upkeep, replacement in case of breakage or vandalism, turning on or off, moving, and demobilization of temporary signs necessary for the performance of work throughout the entire project in accordance with the requirements of this document;
 - .9 Maintenance of signs and traffic lanes including traffic of pedestrian and cyclists, and including requested inspections;
 - .10 The temporary signage, equipment, and labour required to complete the work;
 - .11 Signage for cyclists and pedestrian crossings;
 - .12 Modification and rehabilitation of existing signs if required;
 - .13 All other expenses related to the special requirements of maintaining traffic flow,
 - .14 Any incidental expenses.
- .2 Item 3.2 – Special Signs
- .1 Line item 3.2 of the Bid Form is the price per square meter (m²) of installed special signs, in accordance with the requirements of the specifications and drawings, and as directed by the Departmental Representative.
 - .2 The amount includes, but is not limited to, the following:
 - .1 Preparation, presentation, and correction, if necessary, of shop drawings signed and sealed by an a Professional Engineer, member in good standing, of the *Ordre des ingénieurs du Québec*;
 - .2 Obtaining all required certificates;
 - .3 The supply, processing, transport, and handling required for the materials required for the implementation of the special signs;
 - .4 The mobilization of labour, tools, and equipment required for the execution of the work;
 - .5 Supply of accessories required for the installation of the signs, such as poles, braces, hardware;
 - .6 The implementation, maintenance, replacement in case of accident, damage, or vandalism of the special signs;
 - .7 Dismantling of the special signs at the end of work;
 - .8 Temporary signage required during operations;
 - .9 Any incidental expenses.

Part 3 Products

3.1 NOT USED

- .1 Not Used.

Part 4 Execution

4.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Not used.

1.2 PRICES AND PAYMENT

- .1 The costs of project meetings should be included in the bid prices for each relevant item of the Tender Form.

1.3 ADMINISTRATIVE

- .1 Plan to hold project meetings every two (2) weeks throughout the duration of the works.
- .2 The Departmental Representative prepares agenda for meetings.
- .3 Distribute a written notice of each meeting five (5) days in advance of the meeting date to the Contractor, the Parks Canada Agency (PCA) project manager, the Departmental Representative, and the Design Engineer (when required).
- .4 Provide physical space and make arrangements for meetings.
- .5 The Departmental Representative presides at meetings.
- .6 The Departmental Representative records the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.
- .7 Reproduce and distribute copies of minutes within five days after meetings and transmit to meeting participants and affected parties not in attendance.
- .8 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.4 PRECONSTRUCTION MEETING

- .1 Within 15 days the receipt of the award letter, request a meeting of parties in Contract to discuss and resolve administrative procedures and responsibilities.
- .2 The PCA project manager, the Departmental Representative, the Design Engineer, as well as the Contractor and the main Subcontractors will be in attendance.
- .3 Establish time and location of meeting and notify parties concerned minimum 5 days before meeting.
- .4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.
- .5 Agenda to include:
 - .1 Appointment of official representative of participants in the Work.
 - .2 Schedule of Work
 - .3 Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.

- .4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities.
- .5 Delivery schedule of specified equipment, for each item.
- .6 Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.
- .7 Proposed changes, change orders, procedures, approvals required, , overtime, administrative requirements.
- .8 Owner provided products.
- .9 Record drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .10 Take-over procedures, acceptance and warranties.
- .11 Monthly progress claims, administrative procedures, photographs, hold backs.
- .12 Appointment of inspection and testing agencies or firms.
- .13 Insurances, transcript of policies.
- .14 Shop drawings, development plan, any other document to be submitted for review and approval.

1.5 PROGRESS MEETINGS

- .1 The Departmental Representative shall establish a schedule of the progress meetings to be held every two (2) weeks during the course of the Work, until its completion.
- .2 Contractor, major Subcontractors involved in Work, the PCA project engineer, and the Departmental Representative are to be in attendance.
- .3 Departmental Representative notifies parties a minimum of five (5) days prior to meetings.
- .4 Departmental Representative records minutes of meetings and circulate to attending parties and affected parties not in attendance within five (5) days after meeting.
- .5 Agenda to include the following:
 - .1 Review, approval of minutes of previous meeting.
 - .2 Review of Work progress since previous meeting.
 - .3 Field observations, problems, conflicts.
 - .4 Health and safety.
 - .5 Problems which impede construction schedule.
 - .6 Review of off-site fabrication delivery schedules.
 - .7 Corrective measures and procedures to regain projected schedule.
 - .8 Revision to construction schedule.
 - .9 Progress schedule, during succeeding work period.
 - .10 Review submittal schedules: expedite as required.
 - .11 Maintenance of quality standards.
 - .12 Review proposed changes for effect on construction schedule and on completion date.
 - .13 Other business.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General**1.1 DEFINITIONS**

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

1.2 REQUIREMENTS

- .1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.
- .2 Plan to complete Work in accordance with prescribed milestones and time frame.
- .3 Limit activity durations to maximum of approximately 10 working days, to allow for progress reporting.
- .4 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

- .2 Submit to the Departmental Representative within seven (7) working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.
- .3 Submit Project Schedule to the Departmental Representative within five (5) working days of receipt of acceptance of Master Plan.

1.4 PROJECT MILESTONES

- .1 Project milestones form interim targets for Project Schedule.
 - .1 Planning and landscaping of both Richelieu's River banks;
 - .2 Demolition of the concrete deck in several phases. Three phases are shown on drawings.
 - .3 Any other works provided in plans and specifications and bid form.

1.5 MASTER PLAN

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

1.6 PROJECT SCHEDULE

- .1 Develop detailed Project Schedule derived from Master Plan.
- .2 Ensure detailed Project Schedule includes, as minimum, milestone and activity types as follows:
 - .1 Award;
 - .2 Shop Drawings, Samples;
 - .3 Permits;
 - .4 Mobilization/Demobilisation;
 - .5 Planning and landscaping on both side of Richelieu's River banks;
 - .6 Demolition of concrete deck and phasing with milestones.

1.7 PROJECT SCHEDULE REPORTING

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

1.8 PROJECT MEETINGS

- .1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule

are those with projected start or completion dates later than current approved dates shown on baseline schedule.

- .2 Weather related delays with their remedial measures will be discussed and negotiated.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 NOT USED

- .1 Not used.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 02 41 99 – DEMOLITION FOR MINOR WORKS
- .2 Section 31 00 99 – EARTHWORK FOR MINOR WORKS
- .3 Section 32 91 19.13 – TOPSOIL PLACEMENT AND GRADING

1.2 ADMINISTRATIVE

- .1 A maximum of two (2) weeks after the award of the Contract by Parks Canada, the Contractor must provide a list of subcontractors and proof of contracts with each of them.
- .2 Promptly and according to a predetermined sequence such that the execution of works is not delayed, submit the required documents and samples to the Departmental Representative for inspection. A delay in this respect is not a sufficient reason to obtain an extension to the completion schedule of the Works and therefore no such request will be accepted.
- .3 Do not undertake work for which the submittal of documents and samples are required until the inspection of all documents submitted has been completely finished.
- .4 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .5 Where items or information is not produced in SI Metric units converted values are acceptable.
- .6 Review submittals prior to submission to the Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .7 Notify the Departmental Representative in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .8 Verify field measurements and affected adjacent Work are co-ordinated.
- .9 Contractor's responsibility for errors and omissions in submission is not relieved by the Departmental Representative's review of submittals.
- .10 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by the Departmental Representative's review.
- .11 Keep one reviewed copy of each submission on site.

1.3 SHOP DRAWINGS AND PRODUCT DATA

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures, and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 The shop drawings must bear the seal and signature of a qualified and authorized engineer, member in good standing of the *Ordre des ingénieurs du Québec*.

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

- .10 Relationship to adjacent work.
- .6 References to plans and specifications
- .9 After the Departmental Representative's review, distribute copies.
- .10 Submit two (2) printed copies and one (1) electronic copy of all shop drawings prescribed in the specification sections and according to the requirements of the Departmental Representative.
- .11 If a shop drawing is not required due to the use of a standard manufacturing product, submit two (2) printed copies and one (1) electronic copy of the technical data sheet or the manufacturer's documentation prescribed in the specification sections and as required by the Departmental Representative.
- .12 Submit two (2) printed copies and one (1) electronic copy of the test reports prescribed in the specification sections and as required by the Departmental Representative.
 - .1 The report signed by the official representative of the testing laboratory must certify that materials, products, and systems identical to those proposed in the Work have been tested in accordance with prescribed requirements.
 - .2 The tests must have been carried out within five (5) years preceding the date of contract award.
- .13 Submit two (2) printed copies and one (1) electronic copy of the certificates prescribed in the specification sections and as required by the Departmental Representative.
 - .1 Documents must be printed on official correspondence paper of the manufacturer, signed by a representative of the latter, and must certify that the products, materials, equipment, and systems provided meet the requirements of the specifications.
 - .2 Certificates must bear a date subsequent to the award of the Contract and indicate the name of the project.
- .14 Submit two (2) printed copies and one (1) electronic copy of the manufacturer's instructions as prescribed in the specification sections and as required by the Departmental Representative.
 - .1 Documents must be pre-printed, describing the method of installation of the products, equipment, materials, and systems, including special notices and material safety data sheets indicating any impedances and hazards, as well as safety measures to be implemented.
- .15 Submit two (2) printed copies and one (1) electronic copy of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by the Departmental Representative.
- .16 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .17 Submit two (2) printed copies and one (1) electronic copy of Operation and Maintenance Data for requirements requested in specification Sections and as requested by the Departmental Representative.
- .18 Delete information not applicable to project.
- .19 Supplement standard information to provide details applicable to project.

- .20 If upon review by the Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, one (1) printed copy will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- .21 The review of shop drawings by Parks Canada Agency (PCA) is for sole purpose of ascertaining conformance with general concept.
 - .1 This review shall not mean that PCA approves detailed design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.
 - .2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

1.4 SAMPLES

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

1.5 MOCK-UPS

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

1.6 PHOTOGRAPHIC DOCUMENTATION

- .1 Departmental representative will take photos and videos, contractor shall provide required access.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 02 41 16 – DEMOLITION OF STRUCTURES
- .2 Section 31 00 99 – EARTHWORK FOR MINOR WORKS
- .3 Section 32 91 19.13 – TOPSOIL PLACEMENT AND GRADING
- .4 Section 32 92 19.16 – HYDRAULIC SEEDING

1.2 REFERENCES

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
- .2 Health Canada, Workplace Hazardous Materials Information System (WHMIS)
- .3 Province of Quebec
 - .1 *Loi sur la santé et la sécurité du travail*, L.R.Q., c. S-2.1- updated 2014.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
 - .1 Results of site specific safety hazard assessment.
 - .2 Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.
- .3 Submit 2 copies of Contractor's authorized representative's work site health and safety inspection reports to authority having jurisdiction, weekly, as well as to the Departmental Representative.
- .4 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .5 Submit copies of incident and accident reports.
- .6 Submit the WHMIS material safety data sheets (MSDS).
- .7 The Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 7 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within 5 days after receipt of comments from the Departmental Representative.
- .8 The Departmental Representative's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .9 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to the Departmental Representative.

- .10 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

1.4 FILING OF NOTICE

- .1 File Notice of Project with Provincial Territorial authorities prior to beginning of Work.

1.5 SAFETY ASSESSMENT

- .1 Conduct an assessment of the risks and safety hazards present on the site in relation to the works to be performed.
- .2 It is the responsibility of the Contractor to conduct audits to ensure the safety of the work done in this contract. These checks are needed to avoid the risks of instability or collapse.

1.6 MEETINGS

- .1 Schedule and administer Health and Safety meetings with the Departmental Representative prior to commencement of Work.
- .2 Notify the Departmental Representative at least five (5) days before this meeting.

1.7 REGULATORY REQUIREMENTS

- .1 Perform the Works in accordance with the requirements of the authorities have jurisdiction in the City of Richelieu and Carignan.

1.8 GENERAL REQUIREMENTS

- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- .2 The Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.9 RESPONSIBILITY

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.10 COMPLIANCE REQUIREMENTS

- .1 Comply with the health and safety regulations, *Loi sur la santé et la sécurité du travail*, *Règlement sur les établissements industriels et commerciaux*, R.R.Q.
- .2 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

1.11 UNFORSEEN HAZARDS

- .1 When unforeseen or peculiar safety-related factor, hazard, or condition occurs during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of the Province having jurisdiction and notify the Departmental Representative verbally and in writing.

1.12 HEALTH AND SAFETY CO-ORDINATOR

- .1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:
 - .1 Possess practical construction site experience involving activities associated with concrete repair, electrical works, and paving works.
 - .2 Have working knowledge of occupational safety and health regulations.
 - .3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
 - .4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
 - .5 Be on site during execution of Work and report directly to and the Departmental Representative following his instructions.

1.13 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province Territory having jurisdiction, and in consultation with the Departmental Representative.

1.14 CORRECTION OF NON-COMPLIANCE

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by the Departmental Representative.
- .2 Provide Departmental Representative with written report of action taken to correct non-compliance of health and safety issues identified.
- .3 Departmental Representative may stop Work if non-compliance of health and safety regulations is not corrected.

1.15 BLASTING

- .1 Blasting and other use of explosives are not allowed.

1.16 POWDER ACTUATED DEVICES

- .1 Use powder actuated devices only after receipt of written permission from the Departmental Representative.

1.17 WORK STOPPAGE

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

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 02 41 16 – DEMOLITION OF STRUCTURES
- .2 Section 31 00 99 – EARTHWORK FOR MINOR WORKS
- .3 Section 32 91 19.13 – TOPSOIL PLACEMENT AND GRADING
- .4 Section 32 92 19.16 – HYDRAULIC SEEDING

1.2 REFERENCES

- .1 Definitions:
 - .1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humans; or degrade environment aesthetically, culturally and/or historically.
 - .2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction. Prevention of pollution and damages to the environment covers the protection of soil, water, air, biological and cultural resources; it also includes management of visual aesthetics, noise, solid, chemical, gaseous, and liquid wastes, radiant energy, radioactive materials, and other pollutants.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature, and data sheets that include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit 2 copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .3 Before commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review and approval by the Departmental Representative. The Environmental Protection Plan must include comprehensive overview of known or potential environmental issues to be addressed during construction.
- .4 Address topics at level of detail commensurate with environmental issue and required construction tasks.
- .5 The actions included in the Environmental Protection Plan shall be presented with a level of detail that is consistent with the environmental concerns and the construction works to be performed.

- .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 manifesting hazardous waste to be removed from site.
 - .3 Names and qualifications of persons responsible for training site personnel.
 - .4 Descriptions of environmental protection personnel training program.
 - .5 Drawings showing the location of temporary excavations or site trails landscaped with backfill, the crossing of rivers, materials, construction, sanitation facilities, deposits of surplus materials or contaminated materials; drawings showing the methods to be used to control runoff and to contain materials on the site.
 - .6 Traffic Control Plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather.
 - .1 Plans to include measures to minimize amount of material transported onto paved public roads by vehicles or runoff.
 - .7 Spill Control Plan to include procedures, instructions, and reports to be used 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 job site; intended actions to prevent introduction of such materials into air, water, or ground; and detailing provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.
 - .11 Waste Water Management Plan identifying methods and procedures for management discharge of waste waters which are 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 in flushing of lines.
 - .12 Historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands.
 - .13 Pesticide treatment plan to be included and updated, as required.
 - .14 A plan to prevent erosion and sediment transport, indicating the measures to be implemented, including the production of reports to verify compliance with federal, provincial, and municipal laws and regulations;
 - .15 A plan of the work area, showing the activities in every part of the work area and indicating areas of restricted and prohibited use; the plan must include measures for marking the limits of the useable areas and methods of protection of the elements found within the work areas that must be preserved;
- .7 Mitigation and/or compensation measures described in Appendix of this section must be implemented to the satisfaction of the Departmental Representative.

1.4 FIRES

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

1.5 DRAINAGE

- .1 Develop and submit erosion and Sediment Control Plan (ESC) identifying type and location of erosion and sediment controls provided. Plan to include monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations.
- .2 Provide temporary drainage and pumping required to keep excavations and site free from water.
- .3 Ensure pumped water into waterways, sewer or drainage systems is free of suspended materials.
- .4 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

1.6 SITE CLEARING AND PLANT PROTECTION

- .1 Protect trees and plants on site and adjacent properties as indicated.
- .2 Protect trees and shrubs adjacent to construction work, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of 2 m minimum.
- .3 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage. Avoid driving and uselessly unloading or storing materials over the root zone of the protected trees.
- .4 Minimize stripping of topsoil and vegetation.
- .5 Restrict tree removal to areas indicated unless having received a written authorization from the Parks Canada Agency manager before beginning the work.

1.7 WORK NEAR RIVERS

- .1 Construction equipment must be used only from the shore, however use of equipment on barges is allowed.
- .2 Extract borrow materials from the river beds is strictly prohibited.
- .3 River must remain free of waste material or debris.
- .4 Do not skid logs or building materials from one side to the other streams.
- .5 Blasting is prohibited on the site.

1.8 POLLUTION CONTROL

- .1 Maintain temporary erosion and pollution control features installed under this Contract.
- .2 Control emissions from equipment and plant in accordance with local authorities' emission requirements.
- .3 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area.

- .1 Provide temporary enclosures during the on-site cleaning and painting of steel surfaces.

- .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

1.9 HISTORICAL/ARCHAEOLOGICAL CONTROL

- .1 Provide historical, archaeological, cultural resources, biological resources, and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands known to be on project site: and identifies procedures to be followed if historical archaeological, cultural resources, biological resources and wetlands not previously known to be onsite or in area are discovered during construction.
- .2 Plan: include methods to assure protection of known or discovered resources and identify lines of communication between Contractor personnel and the Departmental Representative.

1.10 NOTIFICATION

- .1 The Departmental Representative will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan.
- .2 Contractor: after receipt of such notice, inform the Departmental Representative of proposed corrective action and take such action for approval by the Departmental Representative.
 - .1 Take action only after receipt of written approval by the Departmental Representative.
- .3 The Departmental Representative will issue stop order of work until satisfactory corrective action has been taken.
- .4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

Part 2 Products

2.1 MATERIAL

- .1 Keep the machinery in operation only during use, except during extreme temperatures to prevent them from stopping.

Part 3 Execution

3.1 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.

- .2 Ensure that streams and storm and public sanitary sewers remain free of waste and flushed volatile materials.
- .3 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.
- .4 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .5 Waste Management : separate waste materials for reuse recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION



Parks Canada - Basic Impact Analysis

Identification of Project Effects and Effect Assessment

Project Component	Environmental Component	Description of Environmental Effect	Effect Assessment	Mitigation Measures	Residual Effect Significance
CONSTRUCTION					
Site preparation	Water — surface water quality	Emission of dust, fine particles and other contaminants associated with material storage areas that could affect surface water.	Negligible	<p>P-17 Cover up bare surfaces or piles of material.</p> <p>P-14 Establish and maintain effective measures to limit the supply and transport of sediment from the site to the aquatic environment (e.g., sedimentation barrier, berm, sediment trap, settling pond, temporary embankment stabilization, divert water in vegetation zones). Implemented measures must remain efficient even during temporary closures (nights, weekends, and holidays) and must be adapted to changing weather conditions.</p>	Not significant
	Flora — vegetation	Loss of riparian and terrestrial vegetation during site preparation (trailer, preparation of work and storage areas.	Negligible	<p>B-1 Limit encroachment along the shoreline and terrestrial environment by clearly identifying construction boundaries. Choose open areas for workspace and avoid wetlands.</p> <p>B-2 Limit cutting/pruning and clearing to a minimum in order to preserve the vegetation coverage as much as possible. Lay out the work area in such a way as to preserve matures trees, which will be identified by Parks Canada ahead of the works. Do not cut or prune ash trees on Fryer Island between March 15th and October 1st; between October 1st and March 15th, ash tree residues must be disposed of at a wood processing facility, or processed on site using a compliant procedure (small woodchips).</p> <p>B-3 Do not cut swamp white oak. A tree inventory must be carried out in the working area on the left bank prior to cutting vegetation. If the presence of swamp white oak tree is identified in the cutting area, then protection measures must be put in place.</p> <p>B-4 Restore and revegetate the site at the end of the work activities. This includes re-establishing the vegetation cover using varied, fast-growing, native species requiring little maintenance and adapted to the project zone, in order to increase the local plant community.</p> <p>B-5 Tree branches and trunks must be cut back as close to the ground or stem as possible.</p> <p>B-6 Trunks and other recovered materials must be transported to a storage site without spreading debris or damaging standing trees or landscape features beyond the boundaries indicated for clearing or storage. They must not be dragged in watercourses.</p>	Not significant



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Project Component	Environmental Component	Description of Environmental Effect	Effect Assessment	Mitigation Measures	Residual Effect Significance
				B-7 Grubbing, stems, roots, encrusted trunks, or other non-earth debris must be removed and shaken off in order to remove soil and loose rocks before their transport to a designated facility.	
Site preparation (cont'd)	Flora — vegetation (cont'd)	Loss of riparian and terrestrial vegetation during site preparation (trailers, preparation of work and storage areas).	Negligible	<p>B-8 Vegetation debris must be removed as quickly as possible and disposed outside the site. It is possible to shred vegetation debris on site to chips of 5 cm or less, by using a shredder.</p> <p>B-9 Store removed vegetation in zones that have already been disturbed, in order to minimize the footprint.</p> <p>B-10 No use of herbicide is permitted along bodies of water.</p> <p>B-11 Monitor the presence of invasive exotic species at the site and prepare a management plan consequently. Avoid sectors with reed grass and thoroughly clean machinery that has come in contact with invasive exotic species so as to prevent these from further spreading to new areas.</p>	Not significant
	Wildlife – loss of habitat	Loss of vegetation that could affect migratory bird nesting as well as bats and small wildlife habitats.	Negligible	<p>12 Undertake site preparation activities outside birds' nesting period (April through August), or conduct nest sweeps (trees and open area vegetation) in the seven days preceding the works, to ensure that no nest will be affected during the nesting period. A nest sweep must also be carried for the dam structures for works carried out during the nesting period.</p> <p>B-13 Relocate all existing nest boxes in the temporary construction zone on Fryer Island during the works period. Nest boxes must be put back in their original places at the end of the works.</p> <p>B-21 Before cutting any tall trees or those with a substantial diameter, check for the presence of bats (May through September). Structures must also be verified for bats. Should the latter be observed, then ensure that works are put on hold until the end of the reproduction period, at which point the works may be carried out. If bats are observed during the work, notify PCA staff as soon as possible.</p> <p>B-22 Verify whether there are dens in the area before proceeding with cutting operation, and avoid disturbing these.</p> <p>B-23 In natural open areas, plan measures to enable snakes, if present, to safely leave the construction zone. Ensure that the work area is confined in a way that prevents them from entering the construction zone.</p>	Not significant



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Project Component	Environmental Component	Description of Environmental Effect	Effect Assessment	Mitigation Measures	Residual Effect Significance
Site preparation (cont'd)	Wildlife — fish and fish habitat	Fish habitat encroachment during construction of boat launch.	Not significant	<p>B-18 Seek advice from Fisheries and Oceans regarding the need to obtain a permit under the Fisheries Act before placing materials below the high water mark (recurrence interval of once in two years). Obtain permits, if required, before conducting work in these areas.</p> <p>B-19 Reduce to a minimum any natural debris removal from below the high water mark in bodies of water; this includes wood, rocks, sand, or other materials from river banks, shore, or bottom of watercourse. If materials are removed from water, they must be set aside and put back in their original locations once the construction works are completed.</p> <p>B-20 Restore bed and banks of the waterbody to their original contour and gradient. If the original gradient cannot be restored due to instability, a stable gradient that does not obstruct fish passage should be restored.</p> <p>P-14 Establish and maintain effective measures to limit the supply and transport of sediment from the site to the aquatic environment (e.g., sedimentation barrier, berm, sediment trap, settling pond, temporary embankment stabilization, divert water in vegetation zones). Implemented measures must remain efficient even during temporary closures (nights, weekends, and holidays) and must be adapted to changing weather conditions.</p>	Not significant
Use and maintenance of machinery (aquatic or terrestrial)	Soils — soil quality	Risks of leaks or accidental oil spills of oil or petroleum products associated with the use of construction vehicles and heavy machinery.	Negligible	<p>P-1 Undertake equipment maintenance in waterproofed zones specifically provided for this purpose.</p> <p>P-2 In the case of a spill, immediately report the situation to stakeholders. Also report the situation without delay to Environment Canada's National Environmental Emergencies Center (1-866-283-2333) as well as the Quebec Government's "Urgence Environnement" environmental emergency hotline (1 866-694-5454).</p> <p>P-3 Prohibit site access to any mobile equipment with fuel leaks.</p> <p>P-4 Properly tune and maintain construction vehicles and equipment.</p> <p>P-5 Ensure that spill recovery kits are available in the construction zone and that an emergency response plan was prepared prior to the construction activities.</p> <p>P-6 Soils to be disposed outside federal property must be brought to a site authorized by the Quebec ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques (MDDELCC), according to their level of contamination.</p> <p>H-4 Ensure that an emergency response plan has been put in place before beginning the construction activities.</p>	Not significant



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Project Component	Environmental Component	Description of Environmental Effect	Effect Assessment	Mitigation Measures	Residual Effect Significance
Use and maintenance of machinery (aquatic or terrestrial) (cont'd)	Water- surface water quality	Risks of leaks or accidental oil spills of oil or petroleum products associated with the use of construction vehicles and heavy machinery on barges.	Negligible	<p>P-9 Divert runoff water toward settling ponds before their discharge into the environment.</p> <p>P-10 Dispose of excavated materials above the high water mark, and confine or stabilize these materials (e.g.: waterproof bash, sedimentation barrier) in a way to prevent sedimentation in the aquatic environment.</p> <p>P-11 Maintain and service equipment at a minimum of 30 meters from the aquatic environment.</p> <p>P-12 Immediately stabilize shoreline or banks disturbed by any activity associated with the project to prevent erosion or sedimentation. Re-vegetate shores using known soil bioengineering techniques promoting overhanging shrub and herbaceous covers. The revegetation must be carried out as quickly as possible following the works' completion, by promoting the use of native species.</p> <p>P-13 Properly tune and maintain marine equipment.</p> <p>P-14 Establish and maintain effective measures to limit the supply and transport of sediment from the site to the aquatic environment (e.g., sedimentation barrier, berm, sediment trap, settling pond, temporary embankment stabilization, divert water in vegetation zones). Implemented measures must remain efficient even during temporary closures (nights, weekends, and holidays) and must be adapted to changing weather conditions.</p> <p>P-15 Do not store petroleum products or hazardous materials within 30 meters of the aquatic environment.</p> <p>P-18 All equipment shall carry a spill recovery kit suitable for use on aquatic environment.</p> <p>P-19 Use vegetable-based product in machinery that is to be used within 30 meters of water or on water.</p> <p>P-20 If contaminants are found, store contaminated water and manage it according to the legislation applicable.</p>	Not significant
	Air — air quality	Emission of dust, fine particles and other air contaminants associated with the operation and the repeated passage of vehicles and construction machinery.	Negligible	<p>P-27 Apply a dust suppressant in unpaved areas in the case of substantial dust presence. Water must be used when the aquatic environment is located within 60 meters.</p> <p>P-28 Avoid leaving construction site engine and truck motor idling when they are not being used.</p> <p>P-29 Install protective tarps on trucks.</p> <p>P-30 Reduce vehicle speed to 15 km/h on the construction site.</p> <p>P-31 Ensure that equipment is supplied with an exhaust ventilation system.</p> <p>P-32 Visually monitor dust emissions and take action to control dust, as needed.</p>	Not significant



Project Component	Environmental Component	Description of Environmental Effect	Effect Assessment	Mitigation Measures	Residual Effect Significance
				H-3 Clean roads soiled by the project construction work.	
Use and maintenance of machinery (aquatic or terrestrial) (cont'd)	Human environment — sound level	Increased noise level related to operations and the movement of construction vehicles and heavy machinery.	Negligible	H-11 Ensure that equipment is provided with properly functioning mufflers.	Not significant
	Human environment — public safety	Increased risk of accidents with the public and users associated with the use of heavy machinery and construction equipment.	Not significant	H-1 Choose a route for transporting materials that avoids residential and recreational areas. H-2 Install sufficient signage indicating the presence of machinery.	Not significant
	Human environment — navigation	Disruption of water activities in the Richelieu River by the presence of barges and other aquatic equipment.	Negligible	H-8 Notify boating companies about the presence of barges and other equipment. H-9 Issue a notice to boaters indicating constraints to navigation. H-10 Obtain a permit from Transport Canada under the Navigation Protection Act.	Not significant
	Wildlife — herpetofauna	Disturbances from the use of barges and other aquatic equipment affecting turtles.	Negligible	B-16 Raise awareness to the Contractor on the potential presence of turtles, particularly the spiny softshell turtle and snapping turtle. If these species are observed, stop the barge motor and wait until the turtles move away from the worksite.	Not significant
Transportation	Water — surface water quality	Emission of dust, fine particles and other contaminants associated with backfill in the Chambly Canal.	Negligible	P-22 Install a sedimentation separation device (e.g., geomembrane) prior to install the temporary controlled embankment, so as to avoid circulating directly on the loose sediment on the bottom of the Chambly canal. P-23 Use appropriate backfill materials that are contaminant-free and which do not contain any invasive or noxious species. P-24 Use vegetable-based products for machinery circulating on the embankment. P-25 Forward to Parks Canada a "before" and "after" report with photos detailing the condition of the embankment following the works. P-26 As much as possible, return the site to its pre-construction condition, including removing the sedimentation separation device and backfill, and dispose of them appropriately. Ensure that the backfill is not contaminated; in case of contamination, ensure contaminants are disposed of in compliance with the MDDELCC's Soil Protection and Contaminated Sites Rehabilitation Policy.	Not significant
	Wildlife — fish and fish habitat	Encroachment on fish habitat associated with the installation of a temporary culvert in the Chambly Canal.	Not significant	B-18 Seek advice from Fisheries and Oceans regarding the need to obtain a permit under the Fisheries Act before placing materials below the high water mark (recurrence interval of once in two years). Obtain permits, if required, before conducting work in these areas.	Not significant



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Project Component	Environmental Component	Description of Environmental Effect	Effect Assessment	Mitigation Measures	Residual Effect Significance
Deck Demolition	Water — surface water quality	Potential contamination of surface water associated with the presence of concrete debris and other materials.	Negligible	P-16 Do not dispose of any debris into the aquatic environment. All debris accidentally introduced must be removed as quickly as possible. P-21 Plan measures for confining and recovering debris (e.g., tarp, geomembrane, or sedimentation barrier weighted or installed parallel to the shore). Take care to limit the movement of residues in the body of water when removing facilities/structures. P-31 Ensure that equipment is supplied with an exhaust ventilation system.	Not significant
	Wildlife — fish and fish habitat	Disruption associated with the presence of aquatic equipment in fish habitat.	Negligible	B-17 When possible, carry out work in fish habitat during the period when it is possible to protect the fish, including their eggs, juveniles, and spawning adults, as well as the organisms on which they feed. The corresponding period is August 1st through March 31st.	Not significant
	Wildlife — birds	Disruption of bird nesting.	Not significant	B-12 Undertake site preparation activities outside birds' nesting period (April through August), or conduct nest sweeps (trees and open area vegetation) in the seven days preceding the works, to ensure that no nest will be affected during the nesting period. A nest sweep must also be carried for the dam structures for works carried out during the nesting period. B-14 The contractor must notify Parks Canada as soon as swallow or peregrine falcon nests are detected within 20 meters of the construction works on the dam structure. B-15 If there are swallow or peregrine falcon nests on the spans, execute the works in phases so as to avoid those spans during the nesting period, which runs from April through July.	Not significant
	Human environment — recreational and tourism activities	Changes to access to the island Fryer and the bike path.	Not significant	H-5 Issue public notices regarding the implementation of detours. H-6 Install fences to protect bike paths and separate the latter from the construction site. H-7 Install signage to help users find their way.	Not significant
Waste management	Water and soil quality	Potential contamination of soil and surface water associated with the presence of residual materials.	Not significant	P-7 Regularly clean construction site areas so that they are kept litter-free at all times. It is prohibited to throw residual materials into the environment. P-8 Hazardous residual materials must be collected by companies holding the appropriate permits for transporting, storing, processing, and eliminating such materials. P-15 Ne pas entreposer de produits pétroliers et de matières dangereuses à moins de 30 m du milieu aquatique. P-16 Do not dispose of any debris into the aquatic environment. All debris accidentally introduced must be removed as quickly as possible. P-21 Plan measures for confining and recovering debris (e.g., tarp, geomembrane, or sedimentation barrier weighted or installed parallel to the shore). Take care to limit	Not significant



Project Component	Environmental Component	Description of Environmental Effect	Effect Assessment	Mitigation Measures	Residual Effect Significance
				the movement of residues in the body of water when removing facilities/structures.	
Site Remediation	Flora and wildlife	Permanent loss of vegetation and disturbance of wildlife habitat.	Not significant	<p>P-12 Immediately stabilize shoreline or banks disturbed by any activity associated with the project to prevent erosion or sedimentation. Re-vegetate shores using known soil bioengineering techniques promoting overhanging shrub and herbaceous covers. The revegetation must be carried out as quickly as possible following the works' completion, by promoting the use of native species.</p> <p>B-4 Restore and revegetate the site at the end of the work activities. This includes re-establishing the vegetation cover using varied, fast-growing, native species requiring little maintenance and adapted to the project zone, in order to increase the local plant community.</p>	Not significant



MITIGATION MEASURES

Mitigation measures aim to reduce or correct project negative environmental impacts. The mitigation could entail a modification of the project plan, design, engineering, or project management. However, it is important to mention that the technical design of the project was undertaken in such a way as to reduce, to the maximum extent possible, any negative environmental impacts on the receiving environment. As such, protection measures planned during the project design are not repeated in the present section.

Mitigation measures were identified within the impact assessment. These measures are regrouped by environmental categories in this section. The mitigation measures presented in this section are thus listed according to environment settings: physical (P), biological (B), or human (H).

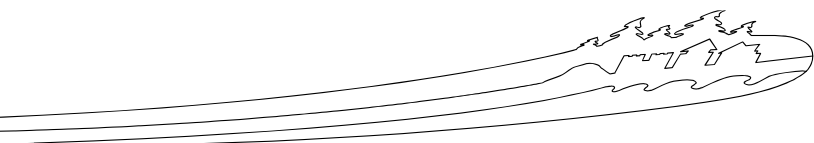
Physical Environment

Soil Quality

- P-1 Undertake equipment maintenance in waterproofed zones specifically provided for this purpose.
- P-2 In the case of a spill, immediately report the situation to stakeholders. Also report the situation without delay to Environment Canada's National Environmental Emergencies Center (1-866-283-2333) as well as the Quebec Government's "Urgence Environnement" environmental emergency hotline (1-866-694-5454).
- P-3 Prohibit site access to any mobile equipment with fuel leaks.
- P-4 Properly tune and maintain construction vehicles and equipment.
- P-5 Ensure that spill recovery kits are available in the construction zone and that an emergency response plan was prepared prior to the construction activities.
- P-6 Soils to be disposed outside federal property must be brought to a site authorized by the Quebec ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques (MDDELCC), according to their level of contamination.
- P-7 Regularly clean construction site areas so that they are kept litter-free at all times. It is prohibited to throw residual materials into the environment.
- P-8 Hazardous residual materials must be collected by companies holding the appropriate permits for transporting, storing, processing, and eliminating such materials.

Surface Water Quality

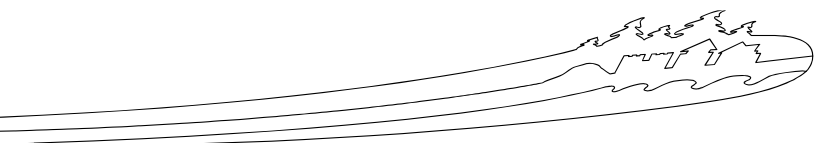
- P-9 Divert runoff water toward settling ponds before their discharge into the environment.





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- P-10 Dispose of excavated materials above the high water mark, and confine or stabilize these materials (e.g.: waterproof bash, sedimentation barrier) in a way to prevent sedimentation in the aquatic environment.
- P-11 Maintain and service equipment at a minimum of 30 meters from the aquatic environment.
- P-12 Immediately stabilize shoreline or banks disturbed by any activity associated with the project to prevent erosion or sedimentation. Re-vegetate shores using known soil bioengineering techniques promoting overhanging shrub and herbaceous covers. The revegetation must be carried out as quickly as possible following the works' completion, by promoting the use of native species.
- P-13 Properly tune and maintain marine equipment.
- P-14 Establish and maintain effective measures to limit the supply and transport of sediment from the site to the aquatic environment (e.g., sedimentation barrier, berm, sediment trap, settling pond, temporary embankment stabilization, divert water in vegetation zones). Implemented measures must remain efficient even during temporary closures (nights, weekends, and holidays) and must be adapted to changing weather conditions.
- P-15 Do not store petroleum products or hazardous materials within 30 meters of the aquatic environment.
- P-16 Do not dispose of any debris into the aquatic environment. All debris accidentally introduced must be removed as quickly as possible.
- P-17 Cover up bare surfaces or piles of material.
- P-18 All equipment shall carry a spill recovery kit suitable for use on aquatic environment.
- P-19 Use vegetable-based product in machinery that is to be used within 30 meters of water or on water.
- P-20 If contaminants are found, store contaminated water and manage it according to the legislation applicable.
- P-21 Plan measures for confining and recovering debris (e.g., tarp, geomembrane, or sedimentation barrier weighted or installed parallel to the shore). Take care to limit the movement of residues in the body of water when removing facilities/structures.
- P-22 Install a sedimentation separation device (e.g., geomembrane) prior to install the temporary controlled embankment, so as to avoid circulating directly on the loose sediment on the bottom of the Chambly canal.





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- P-23 Use appropriate backfill materials that are contaminant-free and which do not contain any invasive or noxious species.
- P-24 Use vegetable-based products for machinery circulating on the embankment.
- P-25 Forward to Parks Canada a "before" and "after" report with photos detailing the condition of the embankment following the works.
- P-26 As much as possible, return the site to its pre-construction condition, including removing the sedimentation separation device and backfill, and dispose of them appropriately. Ensure that the backfill is not contaminated; in case of contamination, ensure contaminants are disposed of in compliance with the MDDELCC 's Soil Protection and Contaminated Sites Rehabilitation Policy.

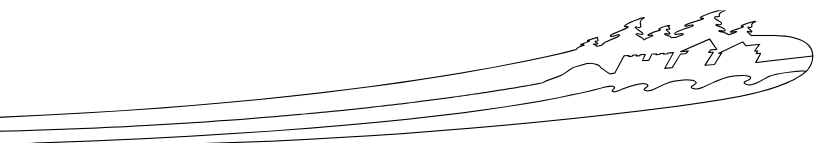
Air Quality

- P-27 Apply a dust suppressant in unpaved areas in the case of substantial dust presence. Water must be used when the aquatic environment is located within 60 meters.
- P-28 Avoid leaving construction site engine and truck motor idling when they are not being used.
- P-29 Install protective tarps on trucks.
- P-30 Reduce vehicle speed to 15 km/h on the construction site.
- P-31 Ensure that equipment is supplied with an exhaust ventilation system.
- P-32 Visually monitor dust emissions and take action to control dust, as needed.

Biological Environment

Riparian and Aquatic Vegetation

- B-1 Limit encroachment along the shoreline and terrestrial environment by clearly identifying construction boundaries. Choose open areas for workspace and avoid wetlands.
- B-2 Limit cutting/pruning and clearing to a minimum in order to preserve the vegetation coverage as much as possible. Lay out the work area in such a way as to preserve matures trees, which will be identified by Parks Canada ahead of the works. Do not cut or prune ash trees on Fryer Island between March 15th and October 1st; between October 1st and March 15th, ash tree residues must be disposed of at a wood processing facility, or processed on site using a compliant procedure (small woodchips).



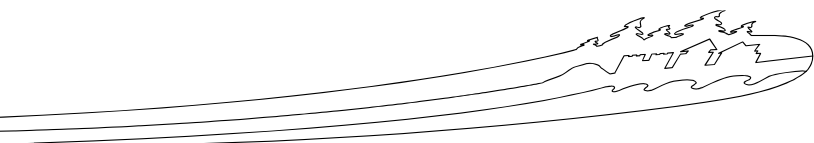


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- B-3 Do not cut swamp white oak. A tree inventory must be carried out in the working area on the left bank prior to cutting vegetation. If the presence of swamp white oak tree is identified in the cutting area, then protection measures must be put in place.
- B-4 Restore and revegetate the site at the end of the work activities. This includes re-establishing the vegetation cover using varied, fast-growing, native species requiring little maintenance and adapted to the project zone, in order to increase the local plant community.
- B-5 Tree branches and trunks must be cut back as close to the ground or stem as possible.
- B-6 Trunks and other recovered materials must be transported to a storage site without spreading debris or damaging standing trees or landscape features beyond the boundaries indicated for clearing or storage. They must not be dragged in watercourses.
- B-7 Grubbing, stems, roots, encrusted trunks, or other non-earth debris must be removed and shaken off in order to remove soil and loose rocks before their transport to a designated facility.
- B-8 Vegetation debris must be removed as quickly as possible and disposed outside the site. It is possible to shred vegetation debris on site to chips of 5 cm or less, by using a shredder.
- B-9 Store removed vegetation in zones that have already been disturbed, in order to minimize the footprint.
- B-10 No use of herbicide is permitted along bodies of water.
- B-11 Monitor the presence of invasive exotic species at the site and prepare a management plan consequently. Avoid sectors with reed grass and thoroughly clean machinery that has come in contact with invasive exotic species so as to prevent these from further spreading to new areas.

Wildlife

- B-12 Undertake site preparation activities outside birds' nesting period (April through August), or conduct nest sweeps (trees and open area vegetation) in the seven days preceding the works, to ensure that no nest will be affected during the nesting period. A nest sweep must also be carried for the dam structures for works carried out during the nesting period.
- B-13 Relocate all existing nest boxes in the temporary construction zone on Fryer Island during the works period. Nest boxes must be put back in their original places at the end of the works.
- B-14 The contractor must notify Parks Canada as soon as swallow or peregrine falcon nests are detected within 20 meters of the construction works on the dam structure.
- B-15 If there are swallow or peregrine falcon nests on the spans, execute the works in phases so as to avoid those spans during the nesting period, which runs from April through July.





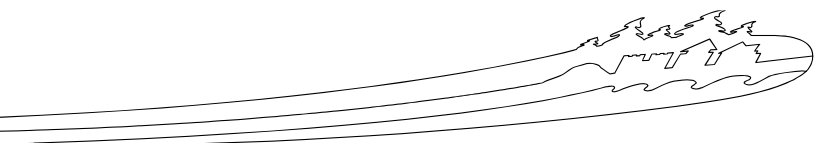
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- B-16 Raise awareness to the Contractor on the potential presence of turtles, particularly the spiny softshell turtle and snapping turtle. If these species are observed, stop the barge motor and wait until the turtles move away from the worksite.
- B-17 When possible, carry out work in fish habitat during the period when it is possible to protect the fish, including their eggs, juveniles, and spawning adults, as well as the organisms on which they feed. The corresponding period is August 1st through March 31st.
- B-18 Seek advice from Fisheries and Oceans regarding the need to obtain a permit under the Fisheries Act before placing materials below the high water mark (recurrence interval of once in two years). Obtain permits, if required, before conducting work in these areas.
- B-19 Reduce to a minimum any natural debris removal from below the high water mark in bodies of water; this includes wood, rocks, sand, or other materials from river banks, shore, or bottom of watercourse. If materials are removed from water, they must be set aside and put back in their original locations once the construction works are completed.
- B-20 Restore bed and banks of the waterbody to their original contour and gradient. If the original gradient cannot be restored due to instability, a stable gradient that does not obstruct fish passage should be restored.
- B-21 Before cutting any tall trees or those with a substantial diameter, check for the presence of bats (May through September). Structures must also be verified for bats. Should the latter be observed, then ensure that works are put on hold until the end of the reproduction period, at which point the works may be carried out. If bats are observed during the work, notify PCA staff as soon as possible.
- B-22 Verify whether there are dens in the area before proceeding with cutting operation, and avoid disturbing these.
- B-23 In natural open areas, plan measures to enable snakes, if present, to safely leave the construction zone. Ensure that the work area is confined in a way that prevents them from entering the construction zone.

Human Environment

Public Safety

- H-1 Choose a route for transporting materials that avoids residential and recreational areas.
- H-2 Install sufficient signage indicating the presence of machinery.
- H-3 Clean roads soiled by the project construction work.





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- H-4 Ensure that an emergency response plan has been put in place before beginning the construction activities.

Recreational and Tourism Activities

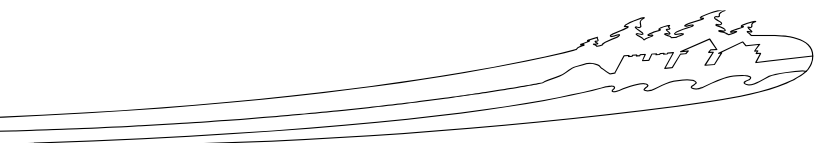
- H-5 Issue public notices regarding the implementation of detours.
- H-6 Install fences to protect bike paths and separate the latter from the construction site.
- H-7 Install signage to help users find their way.

Navigation

- H-8 Notify boating companies about the presence of barges and other equipment.
- H-9 Issue a notice to boaters indicating constraints to navigation.
- H-10 Obtain a permit from Transport Canada under the Navigation Protection Act.

Sound Levels

- H-11 Ensure that equipment is provided with properly functioning mufflers.



Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 02 41 16 – DEMOLITION OF STRUCTURES
- .2 Section 31 00 99 – EARTHWORK FOR MINOR WORKS
- .3 Section 32 91 19.13 – TOPSOIL PLACEMENT AND GRADING
- .4 Section 32 92 19.16 – HYDRAULIC SEEDING

1.2 REFERENCES

- .1 Canadian Construction Documents Committee (CCDC)
 - .1 CCDC 2-94, Stipulated Price Contract.

1.3 INSPECTION

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

1.4 INDEPENDENT INSPECTION AGENCIES

- .1 The Parks Canada Agency (PCA) will be responsible for engaging the services of independent testing and inspection bodies (lab). The cost of these services will be borne by the APC. This does not absolve the Contractor to carry out tests to meet contractual requirements.
- .2 Provide equipment required for executing inspection and testing by appointed agencies.
- .3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by the Departmental Representative at no cost to the Departmental Representative. Pay costs for retesting and reinspection.

1.5 ACCESS TO WORK

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

1.6 PROCEDURES

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

1.7 REJECTED WORK

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

1.8 REPORTS

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

1.9 TESTS AND MIX DESIGNS

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

1.10 MILL TESTS

- .1 Submit mill test certificates as required of specification Sections.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Not used.

1.2 REFERENCES

- .1 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB 1.189-00, Exterior Alkyd Primer for Wood or equivalent approved by the Departmental Representative.
 - .2 CGSB 1.59-97, Alkyd Exterior Gloss Enamel or equivalent approved by the Departmental Representative.
- .2 Canadian Standards Association (CSA International)
 - .1 CSA-A23.1/A23.2, latest edition, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
 - .2 CSA-0121, latest edition, Douglas Fir Plywood.
 - .3 CAN/CSA-S269.2, latest edition, Access Scaffolding for Construction Purposes.
 - .4 CAN/CSA-Z321, latest edition, Signs and Symbols for the Occupational Environment.
- .3 U.S. Environmental Protection Agency (EPA) / Office of Water
 - .1 EPA 832R, last edition, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.
- .4 U.S. Environmental Protection Agency (EPA) / Office Water
 - .1 EPA 832R92005, Storm Water Management for Construction Activities : Developing Pollution Prevention Plan and Best Management Practices.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

1.4 INSTALLATION AND REMOVAL

- .1 The Parks Canada Agency has made land available to the Contractor for the installation of construction site facilities (the Contractor's site office, the Departmental Representative's site office, and storage areas). The mobilisation zone is indicated in appendix.
- .2 Prepare a site plan showing the proposed location and dimensions of the area to be fenced and used by the Contractor, the number of required construction trailers, the access routes to the fenced area, and details of the fence installation.
- .3 Identify areas that must be covered with gravel to prevent mud accumulation.
- .4 Indicate any additional areas or staging areas.
- .5 Provide construction facilities in order to execute work expeditiously.

- .6 Remove from site all such work after use.
- .7 Contractor must provide his own water and electricity.
- .8 Traffic of vehicles on the bicycle path of Chambly canal must permanently regulated by signalmen. The contractor is responsible of maintenance and snow removal of the bicycle path and its access lanes, inside the properties limits of Canada Parks.

1.5 SCAFFOLDING

- .1 Scaffolding in accordance with CAN/CSA-S269.2.
- .2 Provide and maintain scaffolding, ramps, ladders, swing staging, platforms and temporary stairs and ensure proper maintenance throughout the duration of the Works.

1.6 HOISTING

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

1.7 SITE STORAGE/LOADING

- .1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
- .2 Do not load or permit to load any part of Work with weight or force that will endanger Work.
- .3 It is forbidden to use existing cranes, rails, and structural steel.

1.8 CONSTRUCTION PARKING

- .1 Provide and maintain adequate access to project site.

1.9 SECURITY

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

1.10 OFFICES

- .1 Provide office heated to 22 degrees C, lighted 750 lx and ventilated, of sufficient size to accommodate site meetings and furnished with drawing laydown table.
- .2 Provide marked and fully stocked first-aid case in a readily available location.
- .3 Subcontractors to provide their own offices as necessary. Direct location of these offices.
- .4 Site office of the Departmental Representative:
 - .1 Provide temporary office for the Departmental Representative.
 - .2 Inside dimensions minimum 3.6 m long x 3 m wide x 2.4 m high, with floor 0.3 m above grade, complete with 4-50 % opening windows and one lockable door.

- .3 Insulate building and provide heating system to maintain 22 degrees C inside temperature at -20 degrees C outside temperature.
- .4 Finish inside walls and ceiling with plywood, hardboard or wallboard and paint in selected colours. Finish floor with 19 mm thick plywood.
- .5 Install electrical lighting system to provide min 750 lx using surface mounted, shielded commercial fixtures with 10 % upward light component.
- .6 The Departmental Representative's site office must include a high-speed internet connection, with all connection and user fees paid for by the Contractor.
- .7 Provide private washroom facilities adjacent to office complete with flush or chemical type toilet, lavatory and mirror and maintain supply of paper towels and toilet tissue.
- .8 Equip office with 1 x 2 m table, 4 chairs, 6 m of shelving 300 mm wide, one 3 drawer filing cabinet, one plan rack and one coat rack and shelf.
- .9 Maintain in clean condition.

1.11 EQUIPMENT, TOOL AND MATERIALS STORAGE

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

1.12 SANITARY FACILITIES

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

1.13 CONSTRUCTION SIGNAGE

- .1 Provide and erect project sign, within three weeks of signing Contract, in a location designated by the Departmental Representative.
- .2 Construction sign 1200 x 2400 mm, of wood frame and plywood construction painted with exhibit lettering produced by a professional sign painter.
- .3 Indicate on sign, name of Owner, Departmental Representative, of design style established by the Departmental Representative.
- .4 No other signs or advertisements, other than warning signs, are permitted on site.
- .5 Provide project identification site sign comprising foundation, framing, and one 1200 x 2400 mm signboard as detailed and as described below.
 - .1 Foundations: 15 MPa concrete to CSA-A23.1 minimum 200 mm x 900 mm deep.
 - .2 Framework and battens: SPF, pressure treated minimum 89 x 89 mm.
 - .3 Signboard: Medium Density Overlaid Douglas Fir Plywood to CSA O121.
 - .4 Paint: alkyd enamel to CAN/CGSB-1.59 over exterior alkyd primer to CAN/CGSB 1.189.

- .5 Fasteners: hot-dip galvanized steel nails and carriage bolts.
- .6 Vinyl sign face: printed project identification, self adhesive, vinyl film overlay, supplied by the PCA project manager.
- .6 Locate project identification sign where indicated by the Departmental Representative and construct as follows:
 - .1 Paint surfaces of signboard and framing with one coat primer and two coats enamel. Colour white on signboard face, black on other surfaces.
 - .2 Apply vinyl sign face overlay to painted signboard face in accordance with installation instruction supplied.
- .7 Direct requests for approval to erect Departmental Representative/Contractor signboard to the Departmental Representative. For consideration general appearance of Departmental Representative/Contractor signboard must conform to project identification site sign. Wording in both official languages.
- .8 Signs and notices for safety and instruction in both official languages Graphic symbols to CAN/CSA-Z321.
- .9 Maintain approved signs and notices in good condition for duration of project, and dispose of off-site on completion of project or earlier if directed by the Departmental Representative.

1.14 PROTECTION AND MAINTENANCE OF TRAFFIC

- .1 Provide access and temporary relocated roads as necessary to maintain traffic.
- .2 Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by the Departmental Representative.
- .3 Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs.
- .4 Protect travelling public from damage to person and property.
- .5 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.
- .6 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.
- .7 Construct access and haul roads necessary.
- .8 Haul roads: constructed with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic shall be avoided.
- .9 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.
- .10 Dust control: adequate to ensure safe operation at all times.
- .11 Location, grade, width, and alignment of construction and hauling roads: subject to approval by the Departmental Representative.

- .12 Lighting: to assure full and clear visibility for full width of haul road and work areas during night work operations.
- .13 Provide snow removal during period of Work.
- .14 Remove, upon completion of work, haul roads designated by the Departmental Representative.

1.15 CLEAN-UP

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

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 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, in compliance with the requirements of the competent authorities.
- .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.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 02 41 99 – DEMOLITION FOR MINOR WORKS
- .2 Section 31 00 99 – EARTHWORK FOR MINOR WORKS

1.2 REFERENCES

- .1 Canadian General Standards Board (CGSB)
 - .1 CGSB 1.59-97, Alkyd Exterior Gloss Enamel.
 - .2 CAN/CGSB 1.189-00, Exterior Alkyd Primer for Wood.
- .2 Canadian Standards Association (CSA International)
 - .1 CSA-O121-FM1978(C2003), Douglas Fir Plywood.
- .3 Public Works Government Services Canada (PWGSC) Standard Acquisition Clauses and Conditions (SACC)-ID: R0202D, Title: General Conditions 'C', In Effect as Of: May 14, 2004.

1.3 INSTALLATION AND REMOVAL

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

1.4 HOARDING

- .1 Contractor must install at his own expenses fences or hoarding in accordance with Departmental Representative.
- .2 Apply plywood panels vertically as indicated flush and butt jointed.
- .3 Provide one lockable truck entrance gate gates and at least one pedestrian door as directed and conforming to applicable traffic restrictions on adjacent streets. Equip gates with locks and keys.
- .4 Erect and maintain pedestrian walkways including roof and side covers, complete with signs and electrical lighting as required by law.
- .5 Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures.

1.5 GUARD RAILS AND BARRICADES

- .1 Provide secure, rigid guard rails and barricades around deep excavations, unenclosed stairwells and all required area. Provide safety devices required for working at height.
- .2 Provide and install these devices according to the applicable laws and regulations.

1.6 DUST TIGHT SCREENS

- .1 Provide dust tight screens or insulated partitions to localize dust generating activities, and for protection of workers, finished areas of Work and public.
- .2 Maintain and relocate protection until such work is complete.

1.7 TEMPORARY ACCESS STRUCTURES

- .1 Comply with laws, regulations, intergovernmental agreements or decrees from authorities which may at any time and in any way affect the work, labor, equipment, and materials.
- .2 Take responsibility and bear the costs of any claim or obligation that intend to break such laws, regulations, or decrees by the Contractor or its subcontractors or their respective employees.
- .3 Before starting work, the Contractor shall obtain, at his own expense, any licenses or permits required by the laws, decrees, or regulations.
- .4 Describe, on the drawings of the temporary structures, the proposed method used for the repair of a permanent structure.
- .5 Shop Drawings, design calculations, and the Work Plan must be prepared, signed, and sealed by a professional engineer registered member in good standing of the *Ordre des ingénieurs du Québec*. The Work Plan must include structural calculations, the assumptions used for the calculations, the sequence of assembly and disassembly of the various elements, and any other related element.

1.8 ACCESS TO SITE

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

1.9 PUBLIC TRAFFIC FLOW

- .1 Provide and maintain competent signal flag operators, traffic signals, barricades and flares, lights, or lanterns as required to perform Work and protect public.

1.10 FIRE ROUTES

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

1.11 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

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

1.12 WASTE MANAGEMENT AND DISPOSAL

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

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 02 41 16 – DEMOLITION OF STRUCTURES
- .2 Section 31 00 99 – EARTHWORK FOR MINOR WORKS

1.2 QUALIFICATIONS OF SURVEYOR

- .1 Qualified registered land surveyor, licensed to practice in Place of Work, acceptable to the Departmental Representative.

1.3 SURVEY REFERENCE POINTS

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

1.4 SURVEY REQUIREMENTS

- .1 Establish (1) permanent bench marks on site, referenced to established bench marks by survey control points. Record locations, with horizontal and vertical data in Project Record Documents.
- .2 Establish lines and levels, locate and lay out, by instrumentation.
- .3 Stake for grading, fill and topsoil placement and landscaping features.
- .4 Stake slopes.

1.5 EXISTING SERVICES

- .1 Before commencing work, establish location and extent of service lines in area of Work and notify the Departmental Representative of findings.
- .2 Remove abandoned service lines within 2 m of structures. Cap or otherwise seal lines at cut-off points as directed by the Departmental Representative.

1.6 RECORDS

- .1 Maintain a complete, accurate log of control and survey work as it progresses.
- .2 On completion of foundations and major site improvements, prepare a certified survey showing dimensions, locations, angles and elevations of Work.
- .3 Record locations of maintained, re-routed and abandoned service lines.

1.7 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit certificate signed by surveyor certifying and noting those elevations and locations of completed Work that conform and do not conform with Contract Documents.

1.8 SUBSURFACE CONDITIONS

- .1 Promptly notify the Departmental Representative in writing if subsurface conditions at Place of Work differ materially from those indicated in Contract Documents, or a reasonable assumption of probable conditions based thereon.
- .2 After prompt investigation, should the Departmental Representative determine that conditions do differ materially, instructions will be issued for changes in Work as provided in Changes and Change Orders.

Part 2 Products**2.1 NOT USED**

- .1 Not Used.

Part 3 Execution**3.1 NOT USED**

- .1 Not Used.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 02 41 16 – DEMOLITION OF STRUCTURES
- .2 Section 31 00 99 – EARTHWORK FOR MINOR WORKS

1.2 INFORMATION DISPONIBLE DE L'EXISTANT À CONSULTER

- .1 Parks Canada provides Contractors with the information available regarding the Fryer's Dam.
- .2 The PCA does not guarantee the accuracy of the information contained in the available documents as described above and assumes no responsibility with respect thereto.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit written request and obtain from Departmental Representative the authorisation to proceed with clearing and grubbing work.
- .3 Submit written request and obtain from Departmental Representative the authorisation to proceed with development work to access the site.
- .4 Submit written request and obtain from Departmental Representative the authorisation to proceed with excavation, trenching and backfilling work.
- .5 Submit written request and obtain from Departmental Representative the authorisation to proceed with demolition of the concrete deck of Fryer's Dam.

1.4 MATERIALS

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

1.5 PREPARATION

- .1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
- .2 After uncovering, inspect conditions affecting performance of Work.

1.6 EXECUTION

- .1 Execute cutting, fitting, and patching to complete Work.
- .2 Fit several parts together, to integrate with other Work.
- .3 Remove and replace defective and non-conforming Work.
- .4 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.

1.7 WASTE MANAGEMENT AND DISPOSAL

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

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 02 41 16 – DEMOLITION OF STRUCTURES
- .2 Section 31 00 99 – EARTHWORK FOR MINOR WORKS
- .3 Section 31 11 00 – CLEARING AND GRUBBING
- .4 Section 31 23 33.01 – EXCAVATING, TRENCHING AND BACKFILLING
- .5 Section 32 92 19.13 – TOPSOIL PLACEMENT AND GRADING
- .6 Section 32 92 19.16 – HYDRAULIC DEEDING

1.2 PROJECT CLEANLINESS

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris.
- .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by the Departmental Representative. Do not burn waste materials on site.
- .3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .4 Provide on-site containers for collection of waste materials and debris.
- .5 Dispose of waste materials and debris at designated dumping areas on Crown property, off site.

1.3 FINAL CLEANING

- .1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .3 Prior to final review remove surplus products, tools, construction machinery and equipment.

1.4 WASTE MANAGEMENT AND DISPOSAL

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

Part 2 Products**2.1 NOT USED**

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General**1.1 WASTE MANAGEMENT GOALS**

- .1 Prior to start of Work, conduct meeting with the Departmental Representative to review and discuss Parks Canada Agency (PCA) waste management goals.
- .2 Parks Canada Agency (PCA) waste management goal: to divert a minimum 75 percent of total Project Waste from landfill sites.
- .3 Prior to project completion provide the Departmental Representative documentation certifying that waste management, recycling, reuse of recyclable and reusable materials have been extensively practiced.
- .4 Minimize amount of non-hazardous solid waste generated by project and accomplish maximum source reduction, reuse and recycling of solid waste produced by CRD activities.
- .5 Protect environment and prevent environmental pollution damage.

1.2 RELATED REQUIREMENTS

- .1 Section 02 41 16 – DEMOLITION OF STRUCTURES
- .2 Section 31 00 99 – EARTHWORK FOR MINOR WORKS

1.3 REFERENCES

- .1 Definitions:
 - .1 Class III : non-hazardous waste - construction renovation and demolition waste.
 - .2 Cost/Revenue Analysis Workplan (CRAW) : based on information from Waste Reduction Workplan, and intended as financial tracking tool for determining economic status of waste management practices. .
 - .3 Audit des déchets de démolition (ADD) : S'applique aux déchets effectivement générés par les travaux
 - .4 Inert Fill : inert waste - exclusively asphalt and concrete.
 - .5 Waste Source Separation Program (WSSP) : implementation and co-ordination of ongoing activities to ensure designated waste materials will be sorted into pre-defined categories and sent for recycling and reuse, maximizing diversion and potential to reduce disposal costs.
 - .6 Recyclable : ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse.
 - .7 Recycle : process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.
 - .8 Recycling : process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
 - .9 Reuse : repeated use of product in same form but not necessarily for same purpose. Reuse includes:

- .1 Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.
- .2 Returning reusable items including pallets or unused products to vendors.
- .10 Salvage : removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.
- .11 Separate Condition : refers to waste sorted into individual types.
- .12 Source Separation : act of keeping different types of waste materials separate beginning from the point they became waste.
- .13 Waste Audit (WA) : detailed inventory of estimated quantities of waste materials that will be generated during construction, demolition, deconstruction and/or renovation. Involves quantifying by volume/weight amounts of materials and wastes that will be reused, recycled or landfilled. Refer to Schedule A.
- .14 Waste Management Co-ordinator (WMC) : contractor representative responsible for supervising waste management activities as well as co-ordinating required submittal and reporting requirements.
- .15 Waste Reduction Workplan (WRW) : written report which addresses opportunities for reduction, reuse, or recycling of materials generated by project. Specifies diversion goals, implementation and reporting procedures, anticipated results and responsibilities. Waste Reduction Workplan (Schedule B) information acquired from Waste Audit.

1.4 DOCUMENTS

- .1 Post and maintain in visible and accessible area at job site, one copy of following documents:
 - .1 Waste Audit
 - .2 Waste Reduction Workplan
 - .3 Waste Source Separation Program.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Prepare and submit following prior to project start-up:
 - .1 Two (2) copies of completed Waste Audit (WA): Schedule A.
 - .2 Two (2) copies of completed Waste Reduction Workplan (WRW): Schedule B.
 - .3 Two (2) copies of the Demolition Waste Audit (DWA): Schedule C.
 - .4 Two (2) copies of Cost/Revenue Analysis Workplan (CRAW): Schedule E.
 - .5 Two (2) copies of Waste Source Separation Program (WSSP).
- .3 Submit prior to final payment the following:
 - .1 Waste Diversion Report, indicating final quantities by material types salvaged for reuse, recycling or disposal in landfill and recycling centres, re-use depots, landfills and other waste processors that received waste materials (See Schedule C).

- .2 Failure to submit the required report could result in the withholding of final payment.
- .3 For each waste material generated by the project and recycled/reused, recycled, or sold, indicate the quantity in kilograms, the type, and the destination.
- .4 Provide receipts, scale tickets, waybills, waste disposal receipts that confirm quantities and types of materials reused, recycled or disposed of and destination.

1.6 WASTE AUDIT (WA)

- .1 Perform the Waste Audit (WA) prior to project start-up.
- .2 Prepare WA (Schedule A).
- .3 Indicate on the WA (Schedule A) the quantities and types of waste materials that will be generated as well as their potential to be reused and/or recycled.

1.7 WASTE REDUCTION WORKPLAN (WRW)

- .1 Prepare and submit WRW prior to project start-up.
- .2 WRW should include but not limited to:
 - .1 Destination of materials identified.
 - .2 Deconstruction/disassembly techniques and sequencing.
 - .3 Deconstruction/disassembly schedules.
 - .4 Location of waste bins on-site.
 - .5 Security of on-site stock piles and waste bins.
 - .6 Protection of personnel, sub-contractors.
 - .7 Clear labelling of storage areas.
 - .8 Details on materials handling and removal procedures.
 - .9 Quantities of materials to be salvaged for reuse or recycled and materials sent to landfill.
- .3 Structure WRW to prioritize actions and follow 3R's hierarchy, with Reduction as first priority, followed by Reuse, then Recycle.
- .4 WRW must describe the proposed waste management methods.
- .5 Based on the information indicated in the WA, identify opportunities to Reduce, Reuse, and Recycle waste materials.
- .6 Post WRW or summary where workers at site are able to review content.
- .7 Set realistic waste reduction goals; determine existing limitations and develop strategies to eliminate them.
- .8 Monitor and report on waste reduction by documenting total volume (in tonnes) and cost of actual waste removed from project.

1.8 DEMOLITION WASTE AUDIT (DWA)

- .1 Perform the Demolition Waste Audit (DWA) prior to project start-up.
- .2 Prepare DWA (Schedule C).

- .3 Provide an inventory of the quantities of waste materials to be recovered for reuse, recycling, or disposal.

1.9 COST/REVENUE ANALYSIS WORKPLAN (CRAW)

- .1 Prepare CRAW (see Schedule D).

1.10 WASTE SOURCE SEPARATION PROGRAM (WSSP)

- .1 As part of Waste Reduction Workplan, prepare WSSP prior to project start-up.
- .2 WSSP will detail methodology and planned on-site activities for separation of reusable and recyclable materials from waste intended for landfill.
- .3 Provide sufficient on-site facilities and containers for collection, handling, and storage of anticipated quantities of reusable and recyclable materials.
- .4 Provide containers in which materials for reuse and recycling will be deposited.
- .5 Locate containers to facilitate deposit of materials without hindering daily operations.
- .6 Locate separated materials in areas which minimize material damage.
- .7 Waste materials must be collected, handled, and stored on-site and evacuated once sorted:
 - .1 Recovered waste materials must be transported to users of recycled waste materials.
- .8 Waste materials must be collected, handled, and stored on site and evacuated unsorted:
 - .1 Recovered waste materials must be shipped to a site operated under a certificate of approval.
 - .2 Waste materials must be sorted into relevant categories for reuse or recycling.

1.11 STORAGE, HANDLING AND PROTECTION

- .1 Store, materials to be reused, recycled and salvaged in locations as directed by the Departmental Representative.
- .2 Unless specified otherwise, materials for removal become Contractor's property.
- .3 Protect, stockpile, store and catalogue salvaged items.
- .4 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.
- .5 Separate and store materials produced during project in designated areas.
- .6 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated processing facilities.
 - .1 On-site source separation is recommended.
 - .2 Remove co-mingled materials to off site processing facility for separation.
 - .3 Obtain waybills, receipts and/or scale tickets for separated materials removed from site.

1.12 DISPOSAL OF WASTES

- .1 Do not bury rubbish or waste materials.

- .2 Do not dispose of waste or volatile materials into waterways, storm, or sanitary sewers.
- .3 Keep records of construction waste including:
 - .1 Number and size of bins.
 - .2 Waste type of each bin.
 - .3 Total tonnage generated.
 - .4 Tonnage reused or recycled.
 - .5 Reused or recycled waste destination.
- .4 Remove materials on-site as Work progresses.
- .5 Prepare project summary to verify destination and quantities on a material-by-material basis as identified in the waste audit.

1.13 SCHEDULING

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

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 APPLICATION

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

3.2 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 – Cleaning.
- .2 The work zone must be continually cleaned.
- .3 Waste Management: separate waste materials for reuse/recycling. Source separate materials to be reused/recycled into specified sort areas.

3.3 DIVERSION OF MATERIALS

- .1 From following list, separate materials from general waste stream and stockpile in separate piles or containers, as reviewed by the Departmental Representative, and consistent with applicable fire regulations.
 - .1 Mark containers or stockpile areas.
 - .2 Provide instruction on disposal practices.
- .2 On-site sale of materials is not permitted.

.3 Demolition Waste:

Type of Waste Material	Recommended Recovery Percentage	Actual Recovery Percentage
Mecanical Materials	100	
Metal	100	
Rubble	100	
Wood (uncontaminated)	100	

.1 Construction Waste:

Type of Waste Material	Recommended Recovery Percentage	Actual Recovery Percentage
Cardboard	100	
Plastic Packaging	100	
Rubble	100	
Steel	100	
Wood (uncontaminated)	100	
Other	100	

3.4 WASTE AUDIT (WA)

.1 Schedule A – Waste Audit (WA)

(1) Material Category	(2) Material Quantity Unit	(3) Estimated Waste %	(4) Total Quantity of Waste (unit)	(5) Generation Point	(6) Percentage (%) Recycled	(7) Percentage (%) Reused
Wood and Plastics						
Warped Pallet Forms						

(1) Material Category	(2) Material Quantity Unit	(3) Estimated Waste %	(4) Total Quantity of Waste (unit)	(5) Generation Point	(6) Percentage (%) Recycled	(7) Percentage (%) Reused
Plastic Packaging						
Cardboard Packaging						
Wood						
Metal						
Other						

3.5 WASTE REDUCTION WORKPLAN (WRW)

.1 Schedule B

(1) Material Category	(2) Person(s) Responsible	(3) Total Quantity of Waste (unit)	(4) Reused Amount (units) Projected	(5) Actual Amount	(6) Recycled Amount (unit) Projected	(7) Actual Amount Recycled	(8) Material(s) Destination
Wood and Plastics							
Off-cuts							
Warped Pallet Forms							
Plastic Packaging							
Cardboard Packaging							
Other							

(1) Material Category	(2) Person(s) Responsible	(3) Total Quantity of Waste (unit)	(4) Reused Amount (units) Projected	(5) Actual Amount	(6) Recycled Amount (unit) Projected	(7) Actual Amount Recycled	(8) Material(s) Destination
Wood							
Metal							
Concrete							

3.6 DEMOLITION WASTE AUDIT (DWA)

.1 Schedule C – Demolition Waste Audit (DWA)

(1) Material Description	(2) Quantity	(3) Unit	(4) Total	(5) Volume (cum)	(6) Weight (cum)	(7) Observations and Hypotheses
Wood						
Concrete						
Steel						
Other						

3.7 COST/REVENUE ANALYSIS WORKPLAN (CRAW)

.1 Schedule D - Cost/Revenue Analysis Workplan (CRAW)

(1) Material Description	(2) Total Quantity (unit)	(3) Volume (cum)	(4) Weight (cum)	(5) Disposal Cost/Credit (+/-) \$	(6) Category Sub-total (+/-) \$	(7) Cost (-) Credit (+) \$
Wood						

(1) Material Description	(2) Total Quantity (unit)	(3) Volume (cum)	(4) Weight (cum)	(5) Disposal Cost/Credit (+/-) \$	(6) Category Sub- total (+/-) \$	(7) Cost (-) Credit (+) \$
Concrete						

3.8 CANADIAN GOVERNMENTAL DEPARTMENTS CHIEF RESPONSIBILITY FOR THE ENVIRONMENT

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

Province	Address	General Inquiries	Fax
Canada (Quebec)	Ministère de l'Environnement et de la Faune, Siège social 150, boul. René-Lévesque Est Quebec QC G1R 4Y1	418-643-3127 1-800-561-1616	418-646-5974
	Conseil de la conservation et de l'environnement 800, Place d'Youville Place, 19 ^e étage Quebec QC G1R 3P4	418-643-3818	
Montreal	Division du contrôle des rejets industriels, Direction de l'Environnement Service des infrastructures, transport et environnement 827, boul. Crémazie Est, bureau 202 Montreal QC H2M 2T8		
Quebec (Montreal)	5199, rue Sherbrooke Est, bureau 3860 Montreal QC H1T 3X9 Email: montreal@mddefp.gouv.qc.ca	514 873-3636	514 873-5662

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Not used

1.2 REFERENCES

- .1 Canadian Construction Documents Committee (CCDC)
- .2 Canadian Environmental Protection Act (CEPA)
 - .1 SOR/2008-197, Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations.

1.3 ADMINISTRATIVE REQUIREMENTS

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

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

1.4 FINAL CLEANING

- .1 Clean in accordance with Section 01 74 11 – Cleaning.
 - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.
- .2 Waste Management: separate waste materials for reuse/recycling in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 01 77 00 – CLOSEOUT PROCEDURES

1.2 REFERENCES

- .1 Canadian Environmental Protection Act (CEPA)
 - .1 SOR/2008-197, Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations.

1.3 ADMINISTRATIVE REQUIREMENTS

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

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.
- .2 When requested, provide documents confirming the type, supplier, and quality of the products installed.

1.5 FORMAT

- .1 Organize data as instructional manual.
- .2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.
- .3 When multiple binders are used correlate data into related consistent groupings.
 - .1 Identify contents of each binder on spine.
- .4 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.
- .5 Arrange content by systems and process flow under Section numbers and sequence of Table of Contents.

- .6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- .7 Text: manufacturer's printed data, or typewritten data.
- .8 Drawings: provide with reinforced punched binder tab.
 - .1 Bind in with text; fold larger drawings to size of text pages.
- .9 Provide 1:1 scaled CAD files in .dwg format on CD.

1.6 CONTENTS - PROJECT RECORD DOCUMENTS

- .1 Table of Contents for Each Volume: provide title of project;
 - .1 Date of submission; names.
 - .2 Addresses, and telephone numbers of Departmental Representative and Contractor with name of responsible parties.
 - .3 Schedule of products and systems, indexed to content of volume.
- .2 For each product or system:
 - .1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- .3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- .4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- .5 Typewritten Text: as required to supplement product data.
 - .1 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.

1.7 AS -BUILT DOCUMENTS AND SAMPLES

- .1 Maintain, at site for Departmental Representative one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to Contract.
 - .5 Reviewed shop drawings, product data, and samples.
 - .6 Field test records.
 - .7 Inspection certificates.
 - .8 Manufacturer's certificates.
- .2 Store record documents and samples in field office apart from documents used for construction.
 - .1 Provide files, racks, and secure storage.
- .3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.

- .1 Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 Maintain record documents in clean, dry and legible condition.
 - .1 Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for inspection by the Departmental Representative.

1.8 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

- .1 Record information on set of black line opaque drawings, provided by the Departmental Representative.
- .2 Record information concurrently with construction progress.
 - .1 Do not conceal Work until required information is recorded.
- .3 Contract Drawings and shop drawings: mark each item to record actual construction, including:
 - .1 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - .2 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
 - .3 Field changes of dimension and detail.
 - .4 Changes made by change orders.
 - .5 Details not on original Contract Drawings.
 - .6 References to related shop drawings and modifications.
- .4 Specifications: mark each item to record actual construction, including:
 - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
 - .2 Changes made by Addenda and change orders.
- .5 Other Documents: maintain field test records, required by individual specifications sections.
- .6 Provide digital photos, if requested, for site records.

1.9 FINAL SURVEY

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

1.10 WARRANTIES AND BONDS

- .1 Develop warranty management plan to contain information relevant to Warranties.
- .2 Submit warranty management plan, (30) days before planned pre-warranty conference, for the Departmental Representative's approval.
- .3 Warranty management plan to include required actions and documents to assure that the Departmental Representative receives warranties to which it is entitled.

- .4 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.
- .5 Submit, warranty information made available during construction phase, to the Departmental Representative for approval prior to each monthly pay estimate.
- .6 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:
 - .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
 - .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
 - .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within (10) days after completion of applicable item of work.
 - .4 Verify that documents are in proper form, contain full information, and are notarized.
 - .5 Co-execute submittals when required.
 - .6 Retain warranties and bonds until time specified for submittal.
- .7 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
- .8 Nine (9) months after the date of Substantial Completion of the Work, perform a warranty inspection with the Departmental Representative.
- .9 Include information contained in warranty management plan as follows:
 - .1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, subcontractors, manufacturers or suppliers involved.
 - .2 Provide list for each warranted equipment, item, feature of construction or system indicating:
 - .1 Name of item.
 - .2 Model and serial numbers.
 - .3 Location where installed.
 - .4 Name and phone numbers of manufacturers or suppliers.
 - .5 Names, addresses and telephone numbers of sources of spare parts.
 - .6 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.
 - .7 Cross-reference to warranty certificates as applicable.
 - .8 Starting point and duration of warranty period.
 - .9 Summary of maintenance procedures required to continue warranty in force.
 - .10 Cross-Reference to specific pertinent Operation and Maintenance manuals.
 - .11 Organization, names and phone numbers of persons to call for warranty service.

- .12 Typical response time and repair time expected for various warranted equipment.
- .3 Contractor's plans for attendance at 9 month post-construction warranty inspections.
- .4 Procedure and status of tagging of equipment covered by extended warranties.
- .5 Post copies of instructions near selected pieces of equipment where operation is critical for warranty and/or safety reasons.
- .10 Respond in timely manner to oral or written notification of required construction warranty repair work.
- .11 Written verification to follow oral instructions.
- .1 Failure to respond will be cause for the Departmental Representative to proceed with action against Contractor.

Part 2 Products**2.1 NOT USED**

- .1 Not Used.

Part 3 Execution**3.1 NOT USED**

- .1 Not Used.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Not used

1.2 REFERENCES

- .1 Definitions:
 - .1 Hazardous Materials: dangerous substances, dangerous goods, hazardous commodities and hazardous products, include but not limited to: poisons, corrosive agents, flammable substances, ammunition, explosives, radioactive substances, or materials that endanger human health or environment if handled improperly.
 - .2 Waste Management Co-ordinator (WMC): contractor representative responsible for supervising waste management activities as well as co-ordinating related, required submittal and reporting requirements.
 - .3 Waste Audit (WA): detailed inventory of materials in building. Involves quantifying by volume/weight amounts of materials and wastes generated during construction, demolition, deconstruction, or renovation project. Indicates quantities of reuse, recycling and landfill.
 - .4 Waste Reduction Workplan (WRW): written report which addresses opportunities for reduction, reuse, or recycling of materials. WRW is based on information acquired from WA.
- .2 Reference Standards:
 - .1 CSA International
 - .1 CSA S350-M1980, last edition, Code of Practice for Safety in Demolition of Structures.
 - .2 Department of Justice Canada (Jus)
 - .1 Canadian Environmental Assessment Act (CEAA), 1995, c. 37.
 - .2 Canadian Environmental Protection Act (CEPA), 1999, c. 33.
 - .1 SOR/2003-2, On-Road Vehicle and Engine Emission Regulations.
 - .2 SOR/2006-268, Regulations Amending the On-Road Vehicle and Engine Emission Regulations.
 - .3 Transportation of Dangerous Goods Act (TDGA), 1992, c. 34.

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-Installation Meetings:
 - .1 Convene pre-installation meeting 1 week prior to beginning work of this Section, with Contractor's Representative, Departmental Representative in accordance with Section 01 31 19 - Project Meetings to:
 - .1 Verify project requirements.

- .2 Verify existing site conditions adjacent to demolition work.
- .3 Co-ordination with other construction subtrades.
- .2 Hold project meetings every two week.
- .3 Ensure key personnel attend.
- .4 WMC must provide written report on status of waste diversion activity at each meeting.
- .5 Departmental Representative will provide written notification of change to meeting schedule established upon contract award 24 hours prior to scheduled meeting.
- .2 Scheduling:
 - .1 Employ necessary means to meet project time lines without compromising specified minimum rates of material diversion.
 - .1 In event of unforeseen delay notify Departmental Representative.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 WMC is responsible for fulfilment of reporting requirements.
- .3 Prior to beginning of Work on site submit detailed Waste Reduction Work plan in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal and indicate:
 - .1 Descriptions of and anticipated quantities of materials, to be salvaged, reused, recycled, and landfilled.
 - .2 Schedule of selective demolition.
 - .3 Number and location of dumpsters.
 - .4 Anticipated frequency of tippage.
 - .5 Name and address of haulers, waste facilities, waste receiving organizations.
- .4 Submit copies of certified weigh bills from authorized disposal sites and reuse and recycling facilities for material removed from site on a monthly basis.
 - .1 Written authorization from Departmental Representative is required to deviate from haulers, facilities, receiving organizations listed in Waste Reduction Workplan.
- .5 Shop Drawings:
 - .1 Submit for review and approval demolition drawings, diagrams or details showing sequence of demolition work and supporting structures and underpinning.
 - .2 Submit demolition drawings stamped and signed by professional engineer registered or licensed in Province of Quebec, Canada.

1.5 QUALITY ASSURANCE

- .1 Regulatory Requirements: Ensure Work is performed in compliance with CEPA, CEAA, TDGA, applicable Provincial/Territorial and Municipal regulations.

1.6 SITE CONDITIONS

- .1 Environmental protection:
 - .1 Ensure Work is done in accordance with Section 01 35 43 - Environmental Procedures.
 - .2 Ensure Work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.
 - .3 Fires and burning of waste or materials is not permitted on site.
 - .4 Do not bury rubbish waste materials.
 - .5 Do not dispose of waste or volatile materials including but not limited to: mineral spirits, oil, petroleum based lubricants, or toxic cleaning solutions into watercourses, storm or sanitary sewers.
 - .1 Ensure proper disposal procedures are maintained throughout project.
 - .6 Do not pump water containing suspended materials into watercourses, storm or sanitary sewers, or onto adjacent properties.
 - .7 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with authorities having jurisdiction.
 - .8 Protect trees, plants and foliage on site and adjacent properties where indicated.
 - .9 Prevent extraneous materials from contaminating air beyond application area, by providing temporary enclosures during demolition work.
 - .10 Cover or wet down dry materials and waste to prevent blowing dust and debris. Control dust on all temporary roads.

1.7 EXISTING CONDITIONS

- .1 If material resembling spray or trowel applied asbestos or other substance listed as hazardous be encountered in course of demolition, stop work, take preventative measures, and notify Departmental Representative immediately. Proceed only after written instructions have been received from Departmental Representative.
- .2 Structures to be demolished are based on their condition on date that tender is accepted.
 - .1 Remove, protect and store salvaged items as directed by Departmental Representative. Salvage items as identified by Departmental Representative. Deliver to Departmental Representative as directed.

Part 2 Products**2.1 EQUIPMENT**

- .1 Equipment and heavy machinery:
 - .1 On-road vehicles to: CEPA-SOR/2003-2, On-Road Vehicle and Engine Emission Regulations CEPA-SOR/2006-268, Regulations Amending the On-Road Vehicle and Engine Emission Regulations.
 - .2 Off-road vehicles to: EPA CFR 86.098-10, EPA CFR 86.098-11.
- .2 Leave machinery running only while in use, except where extreme temperatures prohibit shutting machinery down.

Part 3 Execution**3.1 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 demolition.
 - .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal after completion of demolition work.
- .2 Protection of in-place conditions:
 - .1 Work in accordance with Section 01 35 43 - Environmental Procedures.
 - .2 Prevent movement, settlement or damage of adjacent structures, services, walks, paving, trees, landscaping, adjacent grades and properties.
 - .1 Provide bracing, shoring and underpinning as required.
 - .2 Repair damage caused by demolition as directed by Departmental Representative.
 - .3 Support affected structures and, if safety of structure being demolished adjacent structures or services appears to be endangered, take preventative measures, stop Work and immediately notify Departmental Representative.
 - .4 Prevent debris from blocking surface drainage system, elevators, mechanical and electrical systems which must remain in operation.
 - .5 Keep noise, dust, and inconvenience to occupants to minimum.
 - .6 Provide temporary dust screens, covers, railings, supports and other protection as required.
 - .7 Do Work in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .3 Surface Preparation:
 - .1 Disconnect and re-route electrical and telephone service lines entering buildings to be demolished.
 - .1 Post warning signs on electrical lines and equipment which must remain energized to serve other properties during period of demolition.
 - .2 Locate and protect utilities. Preserve active utilities traversing site in operating condition.
 - .3 Do not disrupt active or energized utilities traversing premises.
- .4 Notify and obtain approval of utility companies before starting demolition.
- .5 Disconnect, cap, plug or divert, as required, existing public utilities within the property where they interfere with the execution of the work, in conformity with the requirements of the authorities having jurisdiction. Mark the location of these and previously capped or

plugged services on the site and indicate location (horizontal and vertical) on the record drawings. Support, shore up and maintain pipes and conduits encountered.

- .1 Immediately notify Departmental Representative and utility company concerned in case of damage to any utility or service, designated to remain in place.
- .2 Immediately notify Departmental Representative should uncharted utility or service be encountered, and await instruction in writing regarding remedial action.

3.2 DEMOLITION

- .1 Do demolitions work in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.
- .2 Blasting operations not permitted during demolition.
- .3 Remove contaminated or dangerous materials as defined by authorities having jurisdiction, relating to environmental protection, from site and dispose of in safe manner to minimize danger at site or during disposal.
- .4 Prior to start of Work remove contaminated or hazardous materials as defined by authorities having jurisdiction as directed by Departmental Representative from site and dispose of at designated disposal facilities in safe manner and in accordance with TDGA and other applicable requirements. Refer Existing Conditions in PART 1.
- .5 Demolish concrete deck and all related components as indicated on plans. Demolish stairs located on both side of the Fryer's Dam.
- .6 Crush concrete generated due to demolition of foundations to size suitable for recycling.
 - .1 Where possible identify markets which will accept crushed material as aggregate.
 - .2 For further information regarding acceptable uses contact Provincial / Territorial aggregate producers associations.
- .7 At end of each day's work, leave Work in safe and stable condition.
- .8 Demolish to minimize dusting. Keep materials wetted as directed by Departmental Representative.
- .9 Remove and dispose of demolished materials except where noted otherwise and in accordance with authorities having jurisdiction.
- .10 Use natural lighting to do Work where possible.

3.3 CLEANING

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

- .5 Divert excess materials from landfill to site approved by Departmental Representative.
- .6 Designate appropriate security resources / measures to prevent vandalism, damage and theft. Do not allow the public to access Fryer's Dam.
- .7 Transport material designated for alternate disposal using approved haulers and facilities listed in Waste Reduction Workplan and in accordance with applicable regulations.
- .8 Dispose of materials not designated for alternate disposal in accordance with applicable regulations.
 - .1 Disposal facilities must be those approved of and listed in Waste Reduction Workplan.
 - .2 Written authorization from Departmental Representative is required to deviate from disposal facilities listed in Waste Reduction Workplan.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Note used

1.2 REFERENCES

- .1 ASTM International
 - .1 ASTM D698-07e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³) (600kN-m/m³).
- .2 CSA International
 - .1 CSA A23.1/A23.2-09, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.
- .3 Ministère des Transports du Québec
 - .1 Cahier des charges et devis généraux (CCDG) : infrastructures routières, Édition 2010.
- .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 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures
 - .1 Construction Waste Management:
 - .1 Submit project Waste Management Plan highlighting recycling and salvage requirements.

Part 2 PRODUCT**2.1 MATERIALS**

- .1 Gravel, sand, stone's dust and crushed granular material 20-0 and 56-0 must conform to CCDG.
- .2 Infill material dimensionally stabilized.

Part 3 Execution**3.1 EXAMINATION**

- .1 Verification of Conditions:
 - .1 Before commencing work verify and establish locations of buried services on and adjacent to site.

- .2 Evaluation and Assessment:
 - .1 Arrange with appropriate authority for relocation of buried services that interfere with execution of work. Pay costs of relocating services.
 - .2 Testing of materials and compaction of backfill and fill will be carried out by testing laboratory designated by the Departmental Representative.
 - .3 Not later than 1 week before backfilling or filling, provide to designated testing agency, sample of material proposed for use.
 - .4 Not later than 48 hours before backfilling or filling with approved material, notify the Departmental Representative so that compaction tests can be carried out by designated testing agency.
 - .5 Before commencing work, conduct, with the Departmental Representative, condition survey of existing structures, trees and plants, lawns, fencing, service poles, wires, rail tracks and paving, survey bench marks and monuments which may be affected by work.

3.2 PREPARATION

- .1 Temporary Erosion and Sedimentation Control:
 - .1 Use 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, 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 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.
 - .2 Protect buried services that are to remain undisturbed.
- .3 Removal:
 - .1 Remove obsolete buried services within 2 m of foundations. Cap cut-offs.
 - .2 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.
 - .3 Cut pavement or sidewalk neatly along limits of proposed excavation in order that surface may break evenly and cleanly.
 - .4 Remove trees, stumps, logs, brush, shrubs, bushes, vines, undergrowth, rotten wood, dead plant material, exposed boulders and debris within areas designated on drawings.
 - .5 Remove stumps and tree roots.

3.3 EXCAVATION

- .1 Shore and brace excavations, protect slopes and banks and perform work in accordance with Provincial and Municipal regulations.
- .2 Topsoil stripping:
 - .1 Do not handle topsoil while in wet or frozen condition or in any manner in which soil structure is adversely affected.
 - .2 Strip topsoil to depths as indicated by the Departmental Representative. Avoid mixing topsoil with subsoil.
 - .3 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.
 - .4 Stockpile in locations as indicated by the Departmental Representative.
 - .5 Dispose of topsoil to location as indicated by the Departmental Representative.
- .3 Excavate as required to carry out work.

3.4 SITE QUALITY CONTROL

- .1 Fill material and spaces to be filled to be inspected and approved by the Departmental Representative.

3.5 BACKFILLING

- .1 Start backfilling only after inspection and receipt of written approval of fill material and spaces to be filled from the Departmental Representative.
- .2 Compaction of subgrade: compact existing subgrade under walks, paving, and slabs on grade, to same compaction as specified for fill. Fill excavated areas with selected subgrade material compacted as specified for fill.
- .3 Placing:
 - .1 Place backfill, fill and basecourse material in 150 mm lifts. Add water as required to achieve specified density.
 - .2 Place unshrinkable fill in areas as indicated. Consolidate and level unshrinkable fill with internal vibrators.
- .4 Compaction: compact each layer of material to following densities for material to ASTM D698:
 - .1 To underside of basecourses: 95 %.
 - .2 Basecourses: 100 %.
 - .3 Elsewhere: 90 %.
- .5 In trenches:
 - .1 Up to 300 mm above pipe or conduit: sand placed by hand.
 - .2 Over 300 mm above pipe or conduit: native material approved by the Departmental Representative.
- .6 Under seeded and sodded areas: use site excavated material to bottom of topsoil except in trenches and within 600 mm of foundations.

- .7 Blown rock material, not capable of fine grading, is not acceptable, imported material must be placed on this type of material.

3.6 GRADING

- .1 Grade to ensure that water will drain away from buildings, walls and paved areas, to catch basins and other disposal areas approved by the Departmental Representative. Grade to be gradual between finished spot elevations as indicated.

3.7 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 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 01 74 11 - Cleaning.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 31 23 33.01 EXCAVATING, TRENCHING AND BACKFILLING
- .2 Section 31 00 99 – EARTHWORK FOR MINOR WORKS

1.2 SCOPE OF WORK

- .1 Provide supervision of the works and provide all labour, equipment, tools, materials, transportation, and other services necessary to conduct and complete all work described and specified in this section and in the contract documents, including, but not limited to: clearing, grubbing trees of all sizes, of all tree stumps located in the work area previously approved by the Departmental Representative, of all shrubs and bushes, branches, etc., excavation, stripping, and storage of the vegetative cover for later reuse, backfilling with granular material consistent and compaction of the specified surfaces to prepare for the various works of the present contract, and the installation of protective stone coverings.
- .2 The Contractor must thoroughly clean the right of way of all materials resulting from the clearing and grubbing performed or resulting from work previously done.
- .3 Deforestation must include the complete removal of any tree, stump, etc. The Contractor must, however, limit deforestation to include only the areas affected by the work, which must first be approved by the Departmental Representative. Everything must be loaded, transported, and disposed of to a site that complies with the requirements of the MDDEFP's Policy on soil protection and the rehabilitation of contaminated land.
- .4 Unless otherwise instructed, the topsoil must be collected as a priority and put in a pile as directed by the Departmental Representative for later use by Canada Parks.
- .5 Rough clearing is to cut the trees and undergrowth, to a height above the ground not exceeding the prescribed height, and to remove the felled timber, wind throw, stumps, and debris littering the ground.
- .6 Clearing to ground level is to cut to a level flush or near the existing ground level all standing trees, brush, shrubs, roots, stumps, and partially buried logs, and to remove the felled timber and debris littering the ground.
- .7 Grubbing involves removing brush, dead wood, and trees with a trunk diameter less than 50 mm, and to remove the felled timber and debris.
- .8 Stump clearing is to pull out stumps and roots to a depth below the existing ground level, not less than that prescribed, and to remove these materials.

1.3 STORAGE AND PROTECTION

- .1 Provide adequate protection of all trees, landscaped areas, natural elements, benchmarks, streams, tree roots to be conserved.
 - .1 If necessary, repair damaged elements to the satisfaction of the Departmental Representative.

- .2 If the trees to conserve were damaged, replace as directed by the Departmental Representative.

1.4 CLEARING

- .1 The clearing works include, but are not limited to, providing equipment and manpower needed to achieve, according to the rules of the art, the clearing of the site according to the specifications and drawings, including:
 - .1 The felling of trees exclusively in the work area approved by the Departmental Representative.
 - .2 The loading, transport, and disposal of debris to a site that complies with the requirements of the MDDEFP's Policy on soil protection and the rehabilitation of contaminated land ("*Politique de protection des sols et de réhabilitation des terrains contaminés*").

1.5 GRUBBING AND STUMP CLEARING

- .1 The stump clearing and grubbing works include, without limitation, providing equipment and manpower needed to achieve, according to the rules of the art, the grubbing and stump clearing of the site for woodlands, wetlands, or other terrains, according to the design specifications including:
 - .1 Rough clearing, clearing to the ground level, grubbing, and stump clearing.
 - .2 The storage of topsoil and humus for later reuse.
 - .3 Drainage and dewatering of the excavation, in accordance with the requirements of Section 31 23 33.01 - Excavating, Trenching and Backfilling.
 - .4 The loading, transport, and disposal of debris to a site that complies with the requirements of the MDDEFP's Policy on soil protection and the rehabilitation of contaminated land ("*Politique de protection des sols et de réhabilitation des terrains contaminés*").

Part 2 Products

2.1 Disposal Site

- .1 The Contractor shall provide the site address where the clearing and grubbing products will be disposed. This site will comply with the requirements of the MDDEFP's Policy on soil protection and the rehabilitation of contaminated land ("*Politique de protection des sols et de réhabilitation des terrains contaminés*").

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

3.2 PREPARATION

- .1 Inspect site and verify with the Departmental Representative, items designated to remain. Locate and protect utility lines: preserve in operating condition active utilities traversing site.
- .2 Identify and delineate areas proposed for the storage of topsoil.

3.3 ROUGH CLEARING

- .1 Perform cuts at a height not exceeding 300 mm above the ground. On land to be subsequently grubbed, stumps remaining after clearing must not amount to more than 500 mm above the ground. Fell trees and cut tree branches that overhang the cleared area.

3.4 CLEARING TO GROUND LEVEL

- .1 Perform ground level clearing to less than 100 mm above the ground.
- .2 Perform ground level clearing work by hand, so as not to damage the muskeg.

3.5 GRUBBING

- .1 Grub designated areas down to ground level.

3.6 STUMP CLEARING

- .1 Pull out stumps and roots to at least 200 mm below the ground level.
- .2 Remove visible stones and rock fragments less than 0.25 m³ in volume, but whose largest dimension is greater than 300 mm.

3.7 REMOVAL AND DISPOSAL OF DEBRIS

- .1 The clearing, grubbing, and stump clearing works must include the loading, transport, and disposal of debris off-site according to the requirements of the MDDEFP's Policy on soil protection and the rehabilitation of contaminated land ("*Politique de protection des sols et de réhabilitation des terrains contaminés*").

3.8 FINISHED SURFACE

- .1 Leave ground surface in condition suitable for immediate grading operations and stripping of topsoil as approved by the Departmental Representative.

3.9 REMOVAL OF TOPSOIL

- .1 In work areas, following the clearing, grubbing, and stump clearing works, start removing topsoil and humus. Unless otherwise indicated, remove the entire depth of topsoil and humus contained within the perimeter of the work site.
- .2 The layer of arable land, topsoil, or any other plant debris must be removed as directed by the Departmental Representative.

- .3 This excavation, even if the work requires it to be done separately or by sorting of material, is part of the 2nd class excavation materials.
- .4 Topsoil and humus to be reused in the project must be placed in a pile in the spaces provided for this purpose and protected against contamination. The height of the pile must not exceed 2 m.

3.10 CLEANING

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

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 31 00 99 – *EARTHWORK FOR MINOR WORKS*

1.2 MEASUREMENT PROCEDURES

- .1 Excavated materials will not be measured for payment.
- .2 Shoring, bracing, cofferdams, underpinning and de-watering of excavation will not be measured separately for payment.
- .3 Backfilling to authorized excavation limits will not be measured for payment.
- .4 Placing and spreading of topsoil will not be measured for payment.
- .5 The following work is will not be subject to any measurement for payment:
- .1 Unnecessary excavation of materials beyond the limits defined by the Departmental Representative, with the exception of the materials will inevitably tumble down. These will not be measured if landslides are due to negligence.
 - .2 Routing and/or drilling and blasting materials.
 - .3 Scarification or shaping of tiered slopes or existing pavement.
 - .4 The removal and disposal of roots, stumps, and other excavated materials during the preparation of land.
 - .5 The burial of existing culverts in place during the construction of existing roads.
 - .6 The removal of unsuitable materials used for fill material as the result of negligence.
 - .7 The fragmentation of a rock mass up to 300 mm below the level of the subgrade.
 - .8 Removal of rock fragments detached from or not secured to the bedrock.
 - .9 Humidification, ventilation, and compaction works.
 - .10 Finishing works.

1.3 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
- .1 ASTM C117-04, Standard Test Method for Material Finer than 0.075 mm (No.200) Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C136-05, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .3 ASTM D422-63/2002, Standard Test Method for Particle-Size Analysis of Soils.
 - .4 ASTM D698-00a/e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³) (600 kN-m/m³).
 - .5 ASTM D1557-02e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³) (2,700 kN-m/m³).
 - .6 ASTM D4318-05, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.
 - .2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.
- .3 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-A3000-03, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
 - .1 CSA-A3001-03, Cementitious Materials for Use in Concrete.
 - .2 CSA-A23.1/A23.2-04, 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 classes of excavation will be recognized; common excavation and rock excavation.
 - .1 Rock: solid material in excess of 1.00 m³ and which cannot be removed by means of heavy duty mechanical excavating equipment with 0.95 to 1.15 m³ bucket. Frozen material not classified as rock.
 - .2 Common excavation: excavation of materials of whatever nature, which are not included under definitions of rock excavation.
- .2 Unclassified excavation: excavation of deposits of whatever character encountered in Work.
- .3 Topsoil:
 - .1 Material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.
 - .2 Material reasonably free from subsoil, clay lumps, brush, objectionable weeds, and other litter, and free from cobbles, stumps, roots, and other objectionable material larger than 25 millimeters 1 inch in any dimension.
- .4 Waste material: excavated material unsuitable for use in Work or surplus to requirements.
- .5 Borrow material: material obtained from locations outside area to be graded, and required for construction of fill areas or for other portions of Work.
- .6 Recycled fill material: material, considered inert, obtained from alternate sources and engineered to meet requirements of fill areas.
- .7 Unsuitable materials:
 - .1 Weak, chemically unstable, and compressible materials.
 - .2 Frost susceptible materials:
 - .1 Fine grained soils with plasticity index less than 10 when tested to ASTM D4318, and gradation within limits specified when tested to ASTM D422 ASTM C136 : Sieve sizes to CAN/CGSB-8.1 CAN/CGSB-8.2.

.2 Table:

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

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

- .8 Unshrinkable fill: very weak mixture of cement, concrete aggregates and water that resists settlement when placed in utility trenches, and capable of being readily excavated.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 - *Submittal Procedures*.
- .2 Quality Control: in accordance with Section 01 45 00 - *Quality Control* :
- .1 Submit condition survey of existing conditions as described in EXISTING CONDITIONS article of this Section.
 - .2 Submit for review by the Departmental Representative proposed dewatering heave prevention methods as described in PART 3 of this Section.
 - .3 Submit to the Departmental Representative written notice at least 7 days prior to excavation work, to ensure cross sections are taken.
 - .4 Submit to the Departmental Representative written notice when bottom of excavation is reached.
 - .5 Submit to the Departmental Representative testing inspection results report as described in PART 3 of this Section.
- .3 Preconstruction Submittals:
- .1 Submit construction equipment list for major equipment to be used in this section prior to start of Work.
 - .2 Submit records of underground utility locates, indicating: location plan of existing utilities as found in field clearance record from utility authority location plan of relocated and abandoned services, as required.
- .4 Samples:
- .1 Submit samples in accordance with Section 01 33 00 - *Submittal Procedures*.
 - .2 Inform the Departmental Representative at least 4 weeks prior to beginning Work, of proposed source of fill unshrinkable fill materials and provide access for sampling.
 - .3 Submit samples off unshrinkable fill specified including representative samples of excavated material.
 - .4 At least 4 weeks prior to beginning Work, inform the Departmental Representative source of fly ash and submit samples to the Departmental Representative.
 - .1 Do not change source of Fly Ash without written approval of the Departmental Representative.

1.6 QUALITY ASSURANCE

- .1 Qualification Statement: submit proof of insurance coverage for professional liability.
- .2 Submit design and supporting data at least 2 weeks prior to beginning Work.
- .3 Design and supporting data submitted to bear stamp and signature of qualified Professional Engineer, member of the *Ordre des ingénieurs du Québec*.
- .4 Retain the services of a recognized, competent engineer, member in good standing of the *Ordre des ingénieurs du Québec* (where the work will be performed) for the design and inspection of cofferdams, shoring works, bracing works, and underpinning works used during the performance of Work.
- .5 Do not use soil material until written report of soil test results are reviewed approved by the Departmental Representative.
- .6 Health and Safety Requirements:
 - .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - *Health and Safety Requirements*.

1.7 WASTE MANAGEMENT AND DISPOSAL

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

1.8 EXISTING CONDITIONS

- .1 Buried services:
 - .1 Before commencing work verify establish location of buried services on and adjacent to site.
 - .2 Arrange with appropriate authority for relocation of buried services that interfere with execution of work: pay costs of relocating services.
 - .3 Remove obsolete buried services within 2 m of foundations: cap cut-offs.
 - .4 Size, depth and location of existing utilities and structures as indicated are for guidance only. Completeness and accuracy are not guaranteed.
 - .5 Prior to beginning excavation Work, establish location and state of use of buried utilities and structures, notify the Departmental Representative, and clearly mark such locations to prevent disturbance to services during Work.
 - .6 Confirm locations of buried utilities by careful test excavations soil hydrovac methods.
 - .7 Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered as indicated.
 - .8 Record location of maintained, re-routed and abandoned underground lines.
 - .9 Confirm locations of recent excavations adjacent to area of excavation.
- .2 Existing buildings and surface features:
 - .1 Conduct, with the Departmental Representative, condition survey of existing buildings, trees and other plants, lawns, fencing, service poles, wires, rail tracks, pavement, survey bench marks and monuments which may be affected by Work.

- .2 Protect existing buildings and surface features from damage while Work is in progress. In event of damage, immediately undertake repairs as directed by the Departmental Representative.
- .3 Where required for excavation, cut roots or branches as directed by the Departmental Representative.

Part 2 Products

2.1 MATERIALS

- .1 Type 1 and Type 2 fill: properties to Section 31 05 16 - *Aggregate Materials* and 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 ASTM C117. Sieve sizes to CAN/CGSB-8.1 CAN/CGSB-8.2.
 - .3 Table:

Sieve Designation	% Passing	
	Type 1	Type 2
75 mm	-	100
50 mm	-	-
37.5 mm	-	-
25 mm	100	-
19 mm	75-100	-
12.5 mm	-	-
9.5 mm	50-100	-
4.75 mm	30-70	22-85
2.00 mm	20-45	-
0.425 mm	10-25	5-30
0.180 mm	-	-
0.075 mm	3-8	0-10

- .2 Geotextiles: to Section 31 32 19.01 - *Geotextiles*.

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 sediment and erosion control drawings sediment and erosion control plan, specific to site, that complies 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 SITE PREPARATION

- .1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.
- .2 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 Section 01 56 00 - *Temporary Barriers and Enclosures* and applicable local regulations.
- .2 Keep excavations clean, free of standing water, and loose soil.
- .3 Where soil is subject to significant volume change due to change in moisture content, cover and protect to the Departmental Representative.
- .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 services that are required to remain undisturbed.

3.4 STRIPPING OF TOPSOIL

- .1 Begin topsoil stripping of areas as indicated by the Departmental Representative after area has been cleared of brush weeds grasses and removed from site.
- .2 Strip topsoil to depths as indicated as directed by the Departmental Representative
 - .1 Do not mix topsoil with subsoil.
- .3 Stockpile in locations as indicated as directed by the Departmental Representative.
 - .1 Stockpile height not to exceed 2 m and should be protected from erosion.
- .4 Dispose of unused topsoil to location as indicated off site as directed by the Departmental Representative.

3.5 STOCKPILING

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

3.6 COFFERDAMS, SHORING, BRACING AND UNDERPINNING

- .1 Maintain sides and slopes of excavations in safe condition by appropriate methods and in accordance with Section 01 35 29.06 - *Health and Safety Requirements* and the *Health and Safety Act for the Province of Quebec*.
 - .1 Where conditions are unstable, Departmental Representative to verify and advise methods.

- .2 During backfill operation:
 - .1 Unless otherwise indicated or directed by the Departmental Representative, remove sheeting and shoring from excavations.
 - .2 Do not remove bracing until backfilling has reached respective levels of such bracing.
 - .3 Pull sheeting in increments that will ensure compacted backfill is maintained at elevation at least 500 mm above toe of sheeting.
- .3 Upon completion of substructure construction:
 - .1 Remove cofferdams, shoring and bracing.

3.7 DEWATERING AND HEAVE PREVENTION

- .1 Keep excavations free of water while Work is in progress.
- .2 Provide for the Departmental Representative's review, approval details of proposed dewatering or heave prevention methods, including dikes, well points, and sheet pile cut-offs.
- .3 Avoid excavation below groundwater table if quick condition or heave is likely to occur.
 - .1 Prevent piping or bottom heave of excavations by groundwater lowering, sheet pile cut-offs, or other means.
- .4 Protect open excavations against flooding and damage due to surface run-off.
- .5 Dispose of water in accordance with Section 01 35 43 - *Environmental Procedures* collection runoff areas and in manner not detrimental to public and private property, or portion of Work completed or under construction.
 - .1 Provide and maintain temporary drainage ditches and other diversions outside of excavation limits.

3.8 EXCAVATION

- .1 Advise the Departmental Representative at least seven (7) days in advance of excavation operations for initial cross sections to be taken.
- .2 Excavate to lines, grades, elevations and dimensions as indicated.
- .3 Keep excavated and stockpiled materials safe distance away from edge of trench as directed by the Departmental Representative.
- .4 Restrict vehicle operations directly adjacent to open trenches.
- .5 Dispose of surplus and unsuitable excavated material in approved location on site off site.
- .6 Do not obstruct flow of surface drainage or natural watercourses.
- .7 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.
- .8 Notify the Departmental Representative when bottom of excavation is reached.
- .9 Obtain the Departmental Representative's approval of completed excavation.

- .10 Remove unsuitable material from trench bottom including those that extend below required elevations to extent and depth as directed by the Departmental Representative.
- .11 Correct unauthorized over-excavation as follows:
 - .1 Fill under other areas with Type 2 fill compacted to not less than 95 % of corrected Standard Proctor maximum dry density.
- .12 Hand trim, make firm and remove loose material and debris from excavations.
 - .1 Where material at bottom of excavation is disturbed, compact foundation soil to density at least equal to undisturbed soil.
 - .2 Clean out rock seams and fill with concrete mortar or grout to approval of the Departmental Representative.
- .13 Install geotextiles in accordance with Section 31 32 19.01 - *Geotextiles*.

3.9 FILL TYPES AND COMPACTION

- .1 Use types of fill as indicated or specified below. Compaction densities are percentages of maximum densities obtained from ASTM D1557.
 - .1 Use Type 2 fill and compact to 95 %.

3.10 BACKFILLING

- .1 Do not proceed with backfilling operations until completion of following:
 - .1 The Departmental Representative has inspected and approved installations.
 - .2 Inspection, testing, approval, and recording location of underground utilities.
 - .3 Removal of concrete formwork.
 - .4 Removal of shoring and bracing; backfilling of voids with satisfactory soil material.
- .2 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.
- .3 Do not use backfill material which is frozen or contains ice, snow or debris.
- .4 Place backfill material in uniform layers not exceeding 150 mm compacted thickness up to grades indicated. Compact each layer before placing succeeding layer.
- .5 Backfilling around installations:
 - .1 Place bedding and surround material as specified elsewhere.
 - .2 Do not backfill around or over cast-in-place concrete within 24 hours after placing of concrete.
 - .3 Where temporary unbalanced earth pressures are liable to develop on walls or other structures:
 - .1 Permit concrete to cure for minimum 14 days or until it has sufficient strength to withstand earth and compaction pressure and approval obtained from the Departmental Representative;
 - .2 If approved by the Departmental Representative, erect bracing or shoring to counteract unbalance, and leave in place until removal is approved by Departmental Representative DCC Representative Departmental Representative .

- .6 Install drainage filter system in backfill as indicated as directed by the Departmental Representative.

3.11 RESTORATION

- .1 Upon completion of Work, remove waste materials and debris in accordance to Section 01 74 21 - *Construction/Demolition Waste Management and Disposal*, trim slopes, and correct defects as directed by the Departmental Representative .
- .2 Replace topsoil as indicated as directed by the Departmental Representative.
- .3 Reinstate lawns to elevation which existed before excavation.
- .4 Reinstate pavements and sidewalks disturbed by excavation to thickness, structure and elevation which existed before excavation.
- .5 Clean and reinstate areas affected by Work as directed by the Departmental Representative.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 32 92 19.16 *HYDRAULIC SEEDING*

1.2 MEASUREMENT PROCEDURES

- .1 Preparation of sub-grade for placing of topsoil will not be measured for payment.
- .2 Topsoil stripping will not be measured for payment.
- .3 Placing of topsoil will not be measured for payment.

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.

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 must be sufficiently decomposed (i.e. stable) so that any further decomposition does not adversely affect plant growth and contain no toxic or growth inhibiting contaminants.
 - .4 Composed bio-solids to: CCME Guidelines for Compost Quality, Category (A) (B).

1.5 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - *Submittal Procedures*.
- .2 Quality control submittals:
 - .1 Soil testing: submit certified test reports showing compliance with specified performance characteristics and physical properties as described in PART 2 - SOURCE QUALITY CONTROL.
 - .2 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.6 QUALITY ASSURANCE

- .1 Pre-installation meetings: conduct pre-installation meeting to verify project requirements, installation instructions and warranty requirements in accordance with Section 01 32 16.07 - *Construction Progress Schedules - Bar (GANTT) Chart*.

1.7 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse /recycling in accordance with Section 01 74 21 - *Construction/Demolition Waste Management and Disposal*.
- .2 Divert unused soil amendments from landfill to an official hazardous material collections site approved by the Departmental Representative.
- .3 Do not dispose of unused soil amendments into sewer systems, into lakes, streams, onto ground or in locations where it will pose health or environmental hazard.

Part 2 Products**2.1 TOPSOIL**

- .1 Topsoil for seeded areas planting beds: mixture of particulates, microorganisms and organic matter which provides suitable medium for supporting intended plant growth.
 - .1 Soil texture based on The Canadian System of Soil Classification, to consist of 20 to 70 % sand, minimum 7 % clay, and contain 2 to 10 % organic matter by weight.
 - .2 Contain no toxic elements or growth inhibiting materials.
 - .3 Finished surface free from:
 - .1 Debris and stones over 50 mm diameter.
 - .2 Course vegetative material, 10 mm diameter and 100 mm length, occupying more than 2 % of soil volume.
 - .4 Consistence: friable when moist.

2.2 SOIL AMENDMENTS

- .1 Fertilizer:
 - .1 Fertility: major soil nutrients present in following amounts:
 - .2 Nitrogen (N): 20 to 40 micrograms of available N 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 Peatmoss:
 - .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 Shredded particle minimum size: 5 mm.
- .3 Sand: washed coarse silica sand, medium to coarse textured.
- .4 Organic matter: compost Category A, B in accordance with CCME PN1340, unprocessed organic matter, such as rotted manure, hay, straw, bark residue or sawdust, meeting the organic matter, stability and contaminant requirements.
- .5 Use composts meeting Category B requirements for land fill reclamation and large scale industrial applications.
- .6 Limestone:
 - .1 Ground agricultural limestone.
 - .2 Gradation requirements: percentage passing by weight, 90 % passing 1.0 mm sieve, 50 % passing 0.125 mm sieve.
- .7 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 Advise the Departmental Representative of sources of topsoil manufactured topsoil to be utilized with sufficient lead time for testing.
- .2 Contractor is responsible for amendments to supply topsoil as specified.
- .3 Soil testing by recognized testing facility for PH, P and K, and organic matter.
- .4 Testing of topsoil will be carried out by testing laboratory designated by the Departmental Representative.
 - .1 Soil sampling, testing and analysis to be in accordance with 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, according to requirements of authorities having jurisdiction sediment and erosion control drawings sediment and erosion control plan, specific to site, that complies with requirements of authorities having jurisdiction, whichever is more stringent.
- .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 STRIPPING OF TOPSOIL

- .1 Begin topsoil stripping of areas as indicated as directed by the Departmental Representative after area has been cleared of brush weeds grasses and removed from site.
- .2 Strip topsoil to depths as indicated as directed by the Departmental Representative.
 - .1 Avoid mixing topsoil with subsoil where textural quality will be moved outside acceptable range of intended application.
- .3 Stockpile in locations as indicated directed by the Departmental Representative.
 - .1 Stockpile height not to exceed 2 m.
- .4 Disposal of unused topsoil is to be in an environmentally responsible manner but not used as landfill as directed by the Departmental Representative.
- .5 Protect stockpiles from contamination and compaction.

3.3 PREPARATION OF EXISTING GRADE

- .1 Verify that grades are correct.
 - .1 If discrepancies occur, notify the Departmental Representative and do not commence work until instructed by the Departmental Representative.
- .2 Grade soil, eliminating uneven areas and low spots, ensuring positive drainage.
- .3 Remove debris, roots, branches, stones in excess of 50 mm diameter and other deleterious materials.
 - .1 Remove soil contaminated with calcium chloride, toxic materials and petroleum products.
 - .2 Remove debris which protrudes more than 75 mm above surface.
 - .3 Dispose of removed material off site.
- .4 Cultivate entire area which is to receive topsoil to minimum depth of 100 mm.
 - .1 Cross cultivate those areas where equipment used for hauling and spreading has compacted soil.

3.4 PLACING AND SPREADING OF TOPSOIL/PLANTING SOIL

- .1 Place topsoil after the Departmental Representative has accepted subgrade.
- .2 Spread topsoil in uniform layers not exceeding 150 mm.
- .3 For sodded areas keep topsoil 15 mm below finished grade.
- .4 Spread topsoil as indicated to following minimum depths after settlement.
 - .1 150 mm for seeded areas.
 - .2 135 mm for sodded areas.
 - .3 300 mm for flower beds.
 - .4 500 mm for shrub beds.
- .5 Manually spread topsoil/planting soil around trees, shrubs and obstacles.

3.5 SOIL AMENDMENTS

- .1 For planting beds turf : apply and thoroughly mix soil amendments into full specified depth of topsoil top 50 mm of existing soil, in the proportions provided by the supplier.

3.6 FINISH GRADING

- .1 Grade to eliminate rough spots and low areas and ensure positive drainage.
 - .1 Prepare loose friable bed by means of cultivation and subsequent raking.
- .2 Consolidate topsoil to required bulk density using equipment approved by the Departmental Representative.
 - .1 Leave surfaces smooth, uniform and firm against deep footprinting.

3.7 ACCEPTANCE

- .1 The Departmental Representative will inspect and test topsoil in place and determine acceptance of material, depth of topsoil and finish grading.

3.8 SURPLUS MATERIAL

- .1 Dispose of materials except topsoil not required off site where directed by the Departmental Representative.

3.9 CLEANING

- .1 Proceed in accordance with Section 01 74 11 - *Cleaning*.
- .2 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 32 91 19.13 – TOPSOIL PLACEMENT AND GRADING

1.2 MEASUREMENT AND PAYMENT

- .1 Hydraulic seeding for each of the following mixtures will not be measured for payment:
 - .1 Grass mixture, including fertilizer.
 - .2 Legume mixture, including fertilizer.
 - .3 Areas of blending into existing turf grass will not be measured for payment.
- .2 Measure maintenance during warranty period of areas will not be measured for payment.
- .3 Seeding will not be measured for payment.

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-Installation Meetings: conduct pre-installation meeting to verify project requirements, installation instructions and warranty requirements in accordance with Section 01 31 19 - *Project Meetings*.
- .2 Scheduling:
 - .1 Schedule hydraulic seeding to coincide with preparation of soil surface.
 - .2 Schedule hydraulic seeding using grass mixtures and mixtures containing Crownvetch Trefoil between dates recommended by Provincial Territorial Regional Agricultural Department.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - *Submittal Procedures*.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for seed, mulch, tackifier, fertilizer, liquid soil amendments and micronutrients.
- .3 Submit in writing 7 days prior to commencing work:
 - .1 Volume capacity of hydraulic seeder in litres.
 - .2 Amount of material to be used per tank based on volume.
 - .3 Number of tank loads required per hectare to apply specified slurry mixture per hectare.
- .4 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .5 Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties.

1.5 QUALITY ASSURANCE

- .1 Qualifications:
 - .1 Landscape Maintenance Supervisor: Landscape Industry Certified Technician with Turf Maintenance designation.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - *Common Product Requirements with manufacturer's written instructions.*
- .2 Delivery and Acceptance Requirements:
 - .1 Labelled bags of fertilizer identifying mass in kg, mix components and percentages, date of bagging, supplier's name and lot number.
 - .2 Inoculant containers to be tagged with expiry date.
- .3 Storage and Handling Requirements:
 - .1 Store fertilizer off ground indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.
- .4 Develop Construction Waste Management Plan Waste Reduction Workplan related to Work of this Section and in accordance with Section 01 74 21 - *Construction/Demolition Waste Management and Disposal.*
- .5 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, packaging materials as specified in Construction Waste Management Plan Waste Reduction Workplan in accordance with Section 01 74 21 - *Construction/Demolition Waste Management and Disposal.*

1.7 WARRANTY

- .1 For seeding, 12 months warranty period is extended to 24 months full growing season.
- .2 Contractor hereby warrants that seeding will remain free of defects in accordance with General Conditions CCDC GC 12.3, but for 24 months full growing season.
- .3 End-of-warranty inspection will be conducted by the Departmental Representative.

Part 2 Products**2.1 MATERIALS**

- .1 Seed: "Canada pedigreed grade" in accordance with Government of Canada Seeds Act and Regulations.
 - .1 Grass mixture: "Certified", "Canada No. 1 Lawn Grass Mixture" in accordance with Government of Canada "Seeds Act" and "Seeds Regulations".
 - .1 Mixture composition:
 - .1 50 % de fétuque rouge traçante (*Festuca rubra* L. var.);
 - .2 30% de pâturin du Kentucky (*Poa pratensis*);

- .3 10% d'agrostide commune (*Agrostis gigantea* Roth);
- .4 10 % d'ivraie vivace (*Lolium perenne*).
- .2 Legume mixture: "Certified", "Specialty Seed", "Canada No. 1 in accordance with Government of Canada "Seeds Act" and "Seeds Regulations".
 - .1 The composition of the mixture must be determined by a specialist and must follow the recommendations of the manufacturer of the inoculant.
- .2 Mulch: specially manufactured for use in hydraulic seeding equipment, non-toxic, water activated, green colouring, free of germination and growth inhibiting factors with following properties:
 - .1 Type I mulch:
 - .1 Made from wood cellulose fibre.
 - .2 Organic matter content: 95 % plus or minus 0.5 %.
 - .3 Value of pH: 6.0.
 - .4 Potential water absorption: 900 %.
 - .2 Type II mulch:
 - .1 Made from newsprint, raw cotton fibre and straw, processed to produce fibre lengths of 15 mm minimum and 25 mm maximum. Greater proportions of ingredients to be straw.
- .3 Tackifier: water dilutable, liquid dispersion water soluble vegetable carbohydrate powder.
- .4 Water: free of impurities that would inhibit germination and growth.
- .5 Fertilizer:
 - .1 To Canada "Fertilizers Act" and Regulations.
 - .2 Complete synthetic, slow release with 35 % of nitrogen content in water-insoluble form.
- .6 Inoculants: inoculant containers to be tagged with expiry date.
- .7 Liquid Soil Amendment and Micronutrients.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrate previously installed under other Sections or Contracts are acceptable for hydraulic seeding in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of the Departmental Representative.
 - .2 Inform the Departmental Representative of unacceptable conditions immediately upon discovery.

- .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from the Departmental Representative.

3.2 PROTECTION OF EXISTING CONDITIONS

- .1 Protect structures, signs, guide rails, fences, plant material, utilities and other surfaces not intended for spray.
- .2 Immediately remove any material sprayed where not intended as directed by the Departmental Representative.

3.3 PREPARATION OF SURFACES

- .1 Do not perform work under adverse field conditions such as wind speeds over 10 km/h, frozen ground or ground covered with snow, ice or standing water.
- .2 Fine grade areas to be seeded free of humps and hollows.
 - .1 Ensure areas are free of deleterious and refuse materials.
- .3 Cultivated areas identified as requiring cultivation to depth of 25 mm.
- .4 Ensure areas to be seeded are moist to depth of 150 mm before seeding.
- .5 Obtain Departmental Representative approval of grade and topsoil depth before starting to seed.

3.4 FERTILIZING PROGRAM

- .1 Fertilize prior to fine grading applying fertilizer equally distributed in accordance with the following program:

Period	Date		Date	Application Rate	Formula (NPK ratio)
Between	Spring Thaw	And	June 15	25 kg/ha	1-3-1
Between	August 15	And	October 15	25 kg/ha	1-3-1

- .2 Fertilize during establishment and warranty periods applying fertilizer equally distributed in accordance with the following program:

Period	Date		Date	Application Rate	Formula (NPK ratio)
Between	Spring Thaw	And	June 15	25 kg/ha	1-3-1
Between	August 15	And	October 15	25 kg/ha	1-3-1

3.5 PREPARATION OF SLURRY

- .1 Measure quantities of materials by weight or weight-calibrated volume measurement satisfactory to the Departmental Representative. Supply equipment required for this work.
- .2 Charge required water into seeder. Add material into hydraulic seeder under agitation. Pulverize mulch and charge slowly into seeder.

- .3 After materials are in seeder and well mixed, charge tackifier into seeder and mix thoroughly to complete slurry.

3.6 SLURRY APPLICATION

- .1 Ensure seed is placed under supervision of certified Landscape Planting Supervisor.
- .2 Hydraulic seeding equipment:
 - .1 Slurry tank.
 - .2 Agitation system for slurry to be capable of operating during charging of tank and during seeding, consisting of recirculation of slurry and/or mechanical agitation method.
 - .3 Capable of seeding by 50 m hand operated hoses and appropriate nozzles.
 - .4 Tank volume to be certified by certifying authority and identified by authorities "Volume Certification Plate".
- .3 Spread slurry mixture consisting of components below. Slurry mixture applied per hectare.
 - .1 Seed: grass legume mixture 250 kg.
 - .2 Mulch: 1,400 kg of wood fiber or straw.
 - .3 Tackifier: according to the manufacturer's recommendations.
 - .4 Water: Minimum 30,000 L.
 - .5 Fertilizer: 125 kg, ratio 1-3-1.
 - .6 Liquid Soil Amendment/Micronutrients : 1,400 L of horticultural peat.
- .4 Apply slurry uniformly, at optimum angle of application for adherence to surfaces and germination of seed.
 - .1 Using correct nozzle for application.
 - .2 Using hoses for surfaces difficult to reach and to control application.
- .5 Blend application 300 mm into adjacent grass areas or sodded areas previous applications to form uniform surfaces.
- .6 Re-apply where application is not uniform.
- .7 Remove slurry from items and areas not designated to be sprayed.

3.7 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - *Cleaning*.
 - .1 Leave Work area clean at end of each day.
 - .2 Keep pavement and area adjacent to site clean and free from mud, dirt, and debris at all times.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - *Cleaning*.
 - .1 Clean and reinstate areas affected by Work.

- .3 Waste Management: separate waste materials for reuse recycling in accordance with Section 01 74 21 - *Construction/Demolition Waste Management and Disposal*.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.
 - .2 Divert unused fertilizer from landfill to official hazardous material collections site approved by the Departmental Representative.

3.8 PROTECTION

- .1 Protect seeded areas from trespass until plants are established.
- .2 Remove protection devices as directed by the Departmental Representative.

3.9 MAINTENANCE DURING ESTABLISHMENT PERIOD

- .1 Ensure maintenance is carried out under supervision of certified Landscape Maintenance Supervisor.
- .2 Perform following operations from time of seed application until acceptance by the Departmental Representative.
- .3 Grass Mixture:
 - .1 Repair and reseed dead or bare spots to allow establishment of seed prior to acceptance.
 - .2 Mow grass to 50 mm whenever it reaches height of 70 mm. Remove clippings which will smother grass.
 - .3 Fertilize seeded areas after first cutting in accordance with fertilizing program. Spread half of required amount of fertilizer in one direction and remainder at right angles; water in well.
 - .4 Control weeds by mechanical or chemical means utilizing acceptable integrated pest management practices.
 - .5 Water seeded area to maintain optimum soil moisture level for germination and continued growth of grass. Control watering to prevent washouts.
- .4 Legume Mixture:
 - .1 Repair minor dead and bare spots as determined by the Departmental Representative to allow establishment of seed prior to acceptance.
 - .2 Repair major dead and bare spots as determined by the Departmental Representative in accordance with site climatic averages and recommendations of local agricultural horticultural governmental representative.
 - .3 Mow legume mixtures to 100 mm whenever height reaches 200 mm and as follows:
 - .1 Do not mow within period commencing 3 weeks before and ending 3 weeks after first severe, average fall frost date and 3 weeks after actual severe fall frost.
 - .2 When mowing after first severe fall frost, mow at a height of not less than 300 mm.
 - .4 Remove clippings that will smother plants.

- .5 Water seeded areas to maintain optimum soil moisture level for germination and continued growth. Control watering to prevent washouts.

3.10 ACCEPTANCE

- .1 Seeded areas will be accepted by the Departmental Representative provided that:
 - .1 Plants are uniformly established. Seeded areas are free of rutted, eroded, bare or dead spots.
 - .2 Areas have been mown at least twice.
 - .3 Areas have been fertilized.
- .2 Areas seeded in fall will achieve final acceptance in following spring, one month after start of growing season provided acceptance conditions are fulfilled.

3.11 MAINTENANCE DURING WARRANTY PERIOD

- .1 Perform following operations from time of acceptance until end of warranty period:
 - .1 Repair and reseed dead or bare spots to satisfaction of the Departmental Representative.
 - .2 Mow seeded areas, remove clippings that will smother grassed areas, as directed by the Departmental Representative, and in accordance with following schedule:
 - .3 Fertilize seeded areas in accordance with fertilizing program. Spread half of required amount of fertilizer in one direction and remainder at right angles and water in well.







END OF SECTION

APPENDICES

APPENDIX 01

01 GEOTECHNICAL STUDY – DRILLING REPORT AND LOCALIZATION

Projet: Barrage Fryer	Localisation : X : Y : Type de sondage : Forage à percussion Équipement : Diedrich D-120 Tubage : mm Carottier : mm	Sondage : F16-02 Page : 1 de 2 Date de début : 2016-05-09 Inspecteur : F. Gilbert Profondeur : 7.37 m Élévation : 30.60 m
No. projet: 159000020		
Client: Agence Parcs Canada		
Site: Zone de mobilisation Nord		
Figure:		

TYPE D'ÉCHANTILLON		TERMINOLOGIE QUALITATIVE		TERMINOLOGIE QUANTITATIVE		SYMBOLES		EAUX SOUTERRAINES	
CF	Cuillère fendue	Argile	< 0,002 mm	Traces	< 10 %	N	Indice de pénétration standard (ASTM D 1586)		
CFC	Échantillonnage continu	Silt	0,002 - 0,08 mm	Un peu	10 - 20 %			Date	Profondeur
CD	Carottier à diamants	Sable	0,08 - 5 mm	Adjectif (...eux)	20 - 35 %	Nc	Indice de pénétration au cône (BNQ 2501-145)	Lecture 1	m
TA	Tarière	Gravier	5 - 80 mm	et (ex: et gravier)	> 35 %			Lecture 2	m
TM	Tube à parois minces	Cailloux	80 - 200 mm	mot principal	Fraction dominante	RQD	Indice de la qualité du roc (%)		
TS	Tube shelby	Blocs	> 200 mm					Remarques :	
MA	Échantillon manuel								
ÉTAT DE L'ÉCHANTILLON		CARACTÉRISTIQUES MÉCANIQUES DES SOLS				INDICE DE QUALITÉ DU ROC		ESPACEMENT DES DISCONTINUITÉS	
	Remanié	COMPACTITÉ	INDICE "N"	CONSISTANCE	Cu OU Su (kPa)	QUALIFICATIF	RQD	Très serré	< 20 mm
	Intact (tube à parois minces)	Très lâche	0 - 4	Très molle	< 12	Très mauvaise	< 25 %	Serré	20 - 60 mm
		Lâche	4 - 10	Molle	12 - 25	Mauvaise	25 - 50 %	Rapproché	60 - 200 mm
	Perdu	Compacte	10 - 30	Ferme	25 - 50	Moyenne	50 - 75 %	Moyennement espacé	200 - 600 mm
		Dense	30 - 50	Raide	50 - 100	Bonne	75 - 90 %	Espacé	600 - 2000 mm
	Carotté (forage au diamant)	Très dense	> 50	Très raide	100 - 200	Excellente	90 - 100 %	Très espacé	2000 - 6000 mm
				Dure	> 200			Éloigné	> 6000 mm

STRATIGRAPHIE				ÉCHANTILLONS							ESSAIS			
PROFONDEUR (m)	PROFONDEUR (pi)	ÉLÉVATION (m) / PROFONDEUR (m)	DESCRIPTION DES SOLS ET DU ROC	SYMBOLE	ÉTAT	TYPE N°	SOUS - ÉCHANTI.	CALIBRE	RECUPÉRATION (%)	N - RQD	Essai de pénétration standard COUPS/150mm	NIVEAU D'EAU / VENUE D'EAU	REMARQUES	
		30.60												
		0.00	Couvert végétal.				A							
		30.52	Remblai:											
		0.08	Sable silteux (SM), traces de gravier; brun, humide, lâche.			CF-1	B	B	100	9	3-5-4-6	W= 15,3, AC		
		29.99												
		0.61	Silt sableux (ML), traces à un peu d'argile; brun-gris, humide, lâche.			CF-2		B	63	10	3-4-6-7	W= 26,6%		
1														
		29.33					A							
		1.27	Sol naturel:											
5			Argile et silt (CH), traces de sable; gris, humide.			CF-3	B	B	100	7	3-3-4-5	W= 31,4%		
						CF-4		B	100	6	2-3-3-4	W= 47,8%		
2														
						CF-5		B	100	6	2-2-4-7	S, LL, W= 48,7%		
3														
						CF-6		B	91	9	3-4-5-4	W= 25,7%		
10														
						CF-7		B	37	7	2-3-4-7	W= 14,9%		
4														
		26.33												
		4.27	Sable et silt (SM), traces de gravier et d'argile; gris-brun, humide, compact.			CF-8		B	66	16	8-8-8-12	AG, W= 10,2%		
15														
		25.72												
		4.88												

Remarques générales:	Vérifié par : B. Godé Date : 2016-05-30
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Sondage :	F16-02
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2 de 2

2 de 2

Date de début :





Inspecteur :	E. Gilbert
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Profondeur : 7.37 m

Élévation :	30.60 m
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

Projet: Barrage Fryer	Localisation : X : Y : Type de sondage : Forage à percussion Équipement : Diedrich D-120 Tubage : mm Carottier : mm	Sondage : F16-03 Page : 1 de 1 Date de début : 2016-05-10 Inspecteur : F. Gilbert Profondeur : 2.51 m Élévation : 29.99 m
No. projet: 159000020		
Cliant: Agence Parcs Canada		
Site: Zone de mobilisation Sud		
Figure:		

TYPE D'ÉCHANTILLON		TERMINOLOGIE QUALITATIVE		TERMINOLOGIE QUANTITATIVE		SYMBOLES		EAUX SOUTERRAINES	
CF	Cuillère fendue	Argile	< 0,002 mm	Traces	< 10 %	N	Indice de pénétration standard (ASTM D 1586)		
CFC	Échantillonnage continu	Silt	0,002 - 0,08 mm	Un peu	10 - 20 %			Date	Profondeur
CD	Carottier à diamants	Sable	0,08 - 5 mm	Adjectif (...eux)	20 - 35 %	Nc	Indice de pénétration au cône (BNQ 2501-145)	Lecture 1	m
TA	Tarière	Gravier	5 - 80 mm	et (ex: et gravier)	> 35 %			Lecture 2	m
TM	Tube à parois minces	Cailloux	80 - 200 mm	mot principal	Fraction dominante	RQD	Indice de la qualité du roc (%)	Remarques :	
TS	Tube shelby	Blocs	> 200 mm						
MA	Échantillon manuel								
ÉTAT DE L'ÉCHANTILLON		CARACTÉRISTIQUES MÉCANIQUES DES SOLS				INDICE DE QUALITÉ DU ROC		ESPACEMENT DES DISCONTINUITÉS	
	Remanié	COMPACTITÉ	INDICE "N"	CONSISTANCE	Cu OU Su (kPa)	QUALIFICATIF	RQD	Très serré	< 20 mm
	Intact (tube à parois minces)	Très lâche	0 - 4	Très molle	< 12	Très mauvaise	< 25 %	Serré	20 - 60 mm
	Perdu	Lâche	4 - 10	Molle	12 - 25	Mauvaise	25 - 50 %	Rapproché	60 - 200 mm
	Carotté (forage au diamant)	Compacte	10 - 30	Ferme	25 - 50	Moyenne	50 - 75 %	Moyennement espacé	200 - 600 mm
		Dense	30 - 50	Raide	50 - 100	Bonne	75 - 90 %	Espacé	600 - 2000 mm
		Très dense	> 50	Très raide	100 - 200	Excellente	90 - 100 %	Très espacé	2000 - 6000 mm
				Dure	> 200			Éloigné	> 6000 mm

STRATIGRAPHIE				ÉCHANTILLONS							ESSAIS			REMARQUES		
PROFONDEUR (m)	PROFONDEUR (pi)	ÉLÉVATION (m) / PROFONDEUR (m)	DESCRIPTION DES SOLS ET DU ROC	SYMBOLE	ÉTAT	TYPE N°	SOUS - ÉCHANTI.	CALIBRE	RECUPÉRATION (%)	N - RQD	Essai de pénétration standard COUPS/150mm	NIVEAU D'EAU / VENUE D'EAU	AG : analyse granulo. S : sédimentométrie C : consolidation oedo. W : teneur en eau W _L : limite liquide W _p : limite plastique Dr : densité relative k : perméabilité f'c : compression simple MO : matière organique AC : analyses chimiques		X : N (pen. standard) ▽ : Nc (pen. dyn.) ■ : Cu intact □ : Cu remanié ◆ : Su intact ◇ : Su remanié <div>W_p W W_L 20 40 60 80</div>	
		29.99	Couvert végétal.				A									
		0.00	Remblai: Silt graveleux sableux (ML); brun à brun-gris, humide. Présence de cailloux en profondeur.			CF-1	B	B	79	41	8-18-23-19		AC. W= 6,4%			
		29.84														
		0.15					CF-2	B	B	16	14	11-10-4-1				
							CF-3	B	B	25	35	7-18-17-4		W= 9,0%		
						CF-4	B	B	79	62	2-22-40-39		AG, W= 13,3 %			
		27.55	Sol naturel: Sable et silt (SM), traces de gravier; brun-gris, humide. Fin du forage suite à un refus sur bloc probable.			CF-5			100	R	50 / 8 cm		W= 16,6 %			
		2.44														
		27.48														
		2.51														
								</								

Remarques générales:	Vérifié par : B. Godé Date : 2016-05-30
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Projet: Barrage Fryer	Localisation : X : Y : Type de sondage : Forage à percussion	Sondage : F16-04
No. projet: 159000020	Équipement : Diedrich D-120	Page : 1 de 1
Cliant: Agence Parcs Canada	Tubage : mm	Date de début : 2016-05-10
Site: Zone de mobilisation Sud	Carottier : mm	Inspecteur : F. Gilbert
Figure:		Profondeur : 2.72 m
		Élévation : 29.87 m

TYPE D'ÉCHANTILLON		TERMINOLOGIE QUALITATIVE		TERMINOLOGIE QUANTITATIVE		SYMBOLES		EAUX SOUTERRAINES	
CF	Cuillère fendue	Argile	< 0,002 mm	Traces	< 10 %	N	Indice de pénétration standard (ASTM D 1586)		
CFC	Échantillonnage continu	Silt	0,002 - 0,08 mm	Un peu	10 - 20 %			Date	Profondeur
CD	Carottier à diamants	Sable	0,08 - 5 mm	Adjectif (...eux)	20 - 35 %	Nc	Indice de pénétration au cône (BNQ 2501-145)	Lecture 1	m
TA	Tarière	Gravier	5 - 80 mm	et (ex: et gravier)	> 35 %			Lecture 2	m
TM	Tube à parois minces	Cailloux	80 - 200 mm	mot principal	Fraction dominante	RQD	Indice de la qualité du roc (%)	Remarques :	
TS	Tube shelby	Blocs	> 200 mm						
MA	Échantillon manuel								
ÉTAT DE L'ÉCHANTILLON		CARACTÉRISTIQUES MÉCANIQUES DES SOLS				INDICE DE QUALITÉ DU ROC		ESPACEMENT DES DISCONTINUITÉS	
	Remanié	COMPACTITÉ	INDICE "N"	CONSISTANCE	Cu OU Su (kPa)	QUALIFICATIF	RQD	Très serré	< 20 mm
	Intact (tube à parois minces)	Très lâche	0 - 4	Très molle	< 12	Très mauvaise	< 25 %	Serré	20 - 60 mm
		Lâche	4 - 10	Molle	12 - 25	Mauvaise	25 - 50 %	Rapproché	60 - 200 mm
	Perdu	Compacte	10 - 30	Ferme	25 - 50	Moyenne	50 - 75 %	Moyennement espacé	200 - 600 mm
		Dense	30 - 50	Raide	50 - 100	Bonne	75 - 90 %	Espacé	600 - 2000 mm
	Carotté (forage au diamant)	Très dense	> 50	Très raide	100 - 200	Excellente	90 - 100 %	Très espacé	2000 - 6000 mm
				Dure	> 200			Éloigné	> 6000 mm

STRATIGRAPHIE				ÉCHANTILLONS						ESSAIS			
PROFONDEUR (m)	PROFONDEUR (pi)	ÉLÉVATION (m) / PROFONDEUR (m)	DESCRIPTION DES SOLS ET DU ROC	SYMBOLE	ÉTAT	TYPE N°	SOUS - ÉCHANTI.	CALIBRE	RECUPÉRATION (%)	N - RQD	Essai de pénétration standard COUPS/150mm	NIVEAU D'EAU / VENUE D'EAU	REMARQUES
0.00	29.87	0.13	Couvert végétal.				A						
0.13	29.74		Remblai:				B	N	67	21	3-5-16-19	AC	
			Silt graveleux sableux (ML); brun, humide, compact à dense. Présence de cailloux.			CF-1							
						CF-2	B		19	39	13-18-21-50 / 8 cm		
28.65	1.22		Refus sur bloc probable. Poursuite au pénétromètre dynamique.										
2.72			Fin du forage.										

Remarques générales:	Vérifié par : B. Godé
	Date : 2016-05-30





Projet: Barrage Fryer	Localisation : X : Y : Type de sondage : Forage à percussion Équipement : Diedrich D-120 Tubage : mm Carottier : mm	Sondage : F16-05 Page : 1 de 1 Date de début : 2016-05-10 Inspecteur : F. Gilbert Profondeur : 3.73 m Élévation : 30.19 m
No. projet: 159000020		
Client: Agence Parcs Canada		
Site: Zone de mobilisation Sud		
Figure:		

TYPE D'ÉCHANTILLON		TERMINOLOGIE QUALITATIVE		TERMINOLOGIE QUANTITATIVE		SYMBOLES		EAUX SOUTERRAINES	
CF	Cuillère fendue	Argile	< 0,002 mm	Traces	< 10 %	N	Indice de pénétration standard (ASTM D 1586)		
CFC	Échantillonnage continu	Silt	0,002 - 0,08 mm	Un peu	10 - 20 %			Date	Profondeur
CD	Carottier à diamants	Sable	0,08 - 5 mm	Adjectif (...eux)	20 - 35 %	Nc	Indice de pénétration au cône (BNQ 2501-145)	Lecture 1	m
TA	Tarière	Gravier	5 - 80 mm	et (ex: et gravier)	> 35 %			Lecture 2	m
TM	Tube à parois minces	Cailloux	80 - 200 mm	mot principal	Fraction dominante	RQD	Indice de la qualité du roc (%)		
TS	Tube shelby	Blocs	> 200 mm					Remarques :	
MA	Échantillon manuel								
ÉTAT DE L'ÉCHANTILLON		CARACTÉRISTIQUES MÉCANIQUES DES SOLS				INDICE DE QUALITÉ DU ROC		ESPACEMENT DES DISCONTINUITÉS	
	Remanié	COMPACTITÉ	INDICE "N"	CONSISTANCE	Cu OU Su (kPa)	QUALIFICATIF	RQD	Très serré	< 20 mm
	Intact (tube à parois minces)	Très lâche	0 - 4	Très molle	< 12	Très mauvaise	< 25 %	Serré	20 - 60 mm
	Perdu	Lâche	4 - 10	Molle	12 - 25	Mauvaise	25 - 50 %	Rapproché	60 - 200 mm
	Carotté (forage au diamant)	Compacte	10 - 30	Ferme	25 - 50	Moyenne	50 - 75 %	Moyennement espacé	200 - 600 mm
		Dense	30 - 50	Raide	50 - 100	Bonne	75 - 90 %	Espacé	600 - 2000 mm
		Très dense	> 50	Très raide	100 - 200	Excellente	90 - 100 %	Très espacé	2000 - 6000 mm
				Dure	> 200			Éloigné	> 6000 mm

STRATIGRAPHIE				ÉCHANTILLONS							NIVEAU D'EAU / VENUE D'EAU		ESSAIS		REMARQUES	
PROFONDEUR (m)	PROFONDEUR (pi)	ÉLÉVATION (m) / PROFONDEUR (m)	DESCRIPTION DES SOLS ET DU ROC	SYMBOLE	ÉTAT	TYPE N°	SOUS - ÉCHANTI.	CALIBRE	RECUPÉRATION (%)	N - RQD	Essai de pénétration standard COUPS/150mm			AG : analyse granulo. S : sédimentométrie C : consolidation oedo. W : teneur en eau W _L : limite liquide W _p : limite plastique Dr : densité relative k : perméabilité f'c : compression simple MO : matière organique AC : analyses chimiques		× : N (pen. standard) ▽ : Nc (pen. dyn.) ■ : Cu intact □ : Cu remanié ◆ : Su intact ◇ : Su remanié
		30.19 0.00 30.09 0.10	Couvert végétal.				A									
			Remblai: Sable silteux graveleux (SM); brun-gris, humide, compact.			CF-1	B	N	92	14	1-3-11-36			AC, AG, W= 10,7%		
1						CF-2	B		42	17	15-9-8-9			W= 16,8%		
5		28.97 1.22	Poursuite au pénétromètre dynamique.													
2																
3																
10																
4		3.73	Fin du forage.													
15																

Remarques générales:	Vérifié par : B. Godé Date : 2016-05-30
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Projet: Barrage Fryer	Localisation : X : Y : Type de sondage : Forage à percussion	Sondage : F16-06
No. projet: 159000020	Équipement : Diedrich D-120	Page : 1 de 1
Client: Agence Parcs Canada	Tubage : mm	Date de début : 2016-05-10
Site: Zone de mobilisation Sud	Carottier : mm	Inspecteur : F. Gilbert
Figure:		Profondeur : 3.25 m
		Élévation : 30.06 m

TYPE D'ÉCHANTILLON		TERMINOLOGIE QUALITATIVE		TERMINOLOGIE QUANTITATIVE		SYMBOLES		EAUX SOUTERRAINES	
CF	Cuillère fendue	Argile	< 0,002 mm	Traces	< 10 %	N	Indice de pénétration standard (ASTM D 1586)		
CFC	Échantillonnage continu	Silt	0,002 - 0,08 mm	Un peu	10 - 20 %			Date	Profondeur
CD	Carottier à diamants	Sable	0,08 - 5 mm	Adjectif (...eux)	20 - 35 %	Nc	Indice de pénétration au cône (BNQ 2501-145)	Lecture 1	m
TA	Tarière	Gravier	5 - 80 mm	et (ex: et gravier)	> 35 %			Lecture 2	m
TM	Tube à parois minces	Cailloux	80 - 200 mm	mot principal	Fraction dominante	RQD	Indice de la qualité du roc (%)	Remarques :	
TS	Tube shelby	Blocs	> 200 mm						
MA	Échantillon manuel								
ÉTAT DE L'ÉCHANTILLON		CARACTÉRISTIQUES MÉCANIQUES DES SOLS				INDICE DE QUALITÉ DU ROC		ESPACEMENT DES DISCONTINUITÉS	
	Remanié	COMPACTITÉ	INDICE "N"	CONSISTANCE	Cu OU Su (kPa)	QUALIFICATIF	RQD	Très serré	< 20 mm
	Intact (tube à parois minces)	Très lâche	0 - 4	Très molle	< 12	Très mauvaise	< 25 %	Serré	20 - 60 mm
	Perdu	Lâche	4 - 10	Molle	12 - 25	Mauvaise	25 - 50 %	Rapproché	60 - 200 mm
	Carotté (forage au diamant)	Compacte	10 - 30	Ferme	25 - 50	Moyenne	50 - 75 %	Moyennement espacé	200 - 600 mm
		Dense	30 - 50	Raide	50 - 100	Bonne	75 - 90 %	Espacé	600 - 2000 mm
		Très dense	> 50	Très raide	100 - 200	Excellente	90 - 100 %	Très espacé	2000 - 6000 mm
				Dure	> 200			Éloigné	> 6000 mm





STRATIGRAPHIE				ÉCHANTILLONS								ESSAIS		REMARQUES
PROFONDEUR (m)	PROFONDEUR (pi)	ÉLÉVATION (m) / PROFONDEUR (m)	DESCRIPTION DES SOLS ET DU ROC	SYMBOLE	ÉTAT	TYPE N°	SOUS - ÉCHANTI.	CALIBRE	RECUPÉRATION (%)	N - RQD	Essai de pénétration standard COUPS/150mm	NIVEAU D'EAU / VENUE D'EAU	AG : analyse granulo. S : sédimentométrie C : consolidation oedo. W : teneur en eau W _L : limite liquide W _p : limite plastique Dr : densité relative k : perméabilité f'c : compression simple MO : matière organique AC : analyses chimiques	
		0.00 30.06 29.98 0.08	Couvert végétal. Remblai: Sable et silt (SM), un peu de gravier; brun-gris, humide, compact.			CF-1	A B	N	84	12	2-6-6-13		AC, W= 10,7%	×
1		28.84 1.22	Poursuite au pénétromètre dynamique.			CF-2	B		92	10	7-5-5-7		AG, W= 14,2%	×
5														▽
2														▽
														▽
3														▽
10														▽
		3.25	Fin du forage.											▽
4														
15														

Remarques générales:	Vérifié par : B. Godé
	Date : 2016-05-30

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Vérifié par : B. Godé
Date : 2016-05-31







Projet: Barrage Fryer	Localisation : X : Y : Type de sondage : Forage à percussion Équipement : Diedrich D-120 Tubage : mm Carottier : mm	Sondage : F16-08 Page : 1 de 1 Date de début : 2016-05-11 Inspecteur : C. Marcoux Profondeur : 2.44 m Élévation : 29.02 m
No. projet: 159000020		
Client: Agence Parcs Canada		
Site: Piste cyclable		
Figure:		

TYPE D'ÉCHANTILLON		TERMINOLOGIE QUALITATIVE		TERMINOLOGIE QUANTITATIVE		SYMBOLES		EAUX SOUTERRAINES	
CF	Cuillère fendue	Argile	< 0,002 mm	Traces	< 10 %	N	Indice de pénétration standard (ASTM D 1586)		
CFC	Échantillonnage continu	Silt	0,002 - 0,08 mm	Un peu	10 - 20 %			Date	Profondeur
CD	Carottier à diamants	Sable	0,08 - 5 mm	Adjectif (...eux)	20 - 35 %	Nc	Indice de pénétration au cône (BNQ 2501-145)	Lecture 1	m
TA	Tarière	Gravier	5 - 80 mm	et (ex: et gravier)	> 35 %			Lecture 2	m
TM	Tube à parois minces	Cailloux	80 - 200 mm	mot principal	Fraction dominante	RQD	Indice de la qualité du roc (%)	Remarques :	
TS	Tube shelby	Blocs	> 200 mm						
MA	Échantillon manuel								
ÉTAT DE L'ÉCHANTILLON		CARACTÉRISTIQUES MÉCANIQUES DES SOLS				INDICE DE QUALITÉ DU ROC		ESPACEMENT DES DISCONTINUITÉS	
	Remanié	COMPACTITÉ	INDICE "N"	CONSISTANCE	Cu OU Su (kPa)	QUALIFICATIF	RQD	Très serré	< 20 mm
	Intact (tube à parois minces)	Très lâche	0 - 4	Très molle	< 12	Très mauvaise	< 25 %	Serré	20 - 60 mm
	Perdu	Lâche	4 - 10	Molle	12 - 25	Mauvaise	25 - 50 %	Rapproché	60 - 200 mm
	Carotté (forage au diamant)	Compacte	10 - 30	Ferme	25 - 50	Moyenne	50 - 75 %	Moyennement espacé	200 - 600 mm
		Dense	30 - 50	Raide	50 - 100	Bonne	75 - 90 %	Espacé	600 - 2000 mm
		Très dense	> 50	Très raide	100 - 200	Excellente	90 - 100 %	Très espacé	2000 - 6000 mm
				Dure	> 200			Éloigné	> 6000 mm

STRATIGRAPHIE					ÉCHANTILLONS						ESSAIS		REMARQUES	
PROFONDEUR (m)	PROFONDEUR (pi)	ÉLÉVATION (m) / PROFONDEUR (m)	DESCRIPTION DES SOLS ET DU ROC	SYMBOLE	ÉTAT	TYPE N°	SOUS - ÉCHANTI.	CALIBRE	RECUPÉRATION (%)	N - RQD	Essai de pénétration standard COUPS/150mm	NIVEAU D'EAU / VENUE D'EAU		AG : analyse granulo. S : sédimentométrie C : consolidation oedo. W : teneur en eau W _L : limite liquide W _p : limite plastique Dr : densité relative k : perméabilité f'c : compression simple MO : matière organique AC : analyses chimiques
		0.00 28.94 0.08	Remblai: Criblure de pierre; gris.		X	CF-1	A	H	88	50	34-27-23-20			
		28.61 0.41	Sable et gravier silteux ; gris, compact.				B							
			Silt et sable (ML), traces de gravier; brun-gris, humide, lâche.				C							
1					X	CF-2		N	62	15	7-6-9-11		AG, W= 31,1%	Nc= 16
5						CF-3		N	71	11	8-5-6-6		W= 9,7%	Nc= 10
2		27.19 1.83	Sol naturel: Silt, un peu d'argile à argileux (CL) et un peu de sable; gris verdâtre, humide. Présence de fragments de roc.			CF-4		B	62	32	1-2-30-31		W= 28,2%	Nc= 7
		26.58 2.44	Fin du forage.											
3	10													
4														
15														

Remarques générales: **Nc: Indice de pénétration corrigé.**Vérifié par : **B. Godé**Date : **2016-05-30**





Projet: Barrage Fryer	Localisation : X : Y :	Sondage : F16-09 Page : 1 de 1
No. projet: 159000020	Type de sondage : Forage à percussion	Date de début : 2016-05-11
Cliant: Agence Parcs Canada	Équipement : Diedrich D-120	Inspecteur : C. Marcoux
Site: Piste cyclable	Tubage : mm	Profondeur : 2.44 m
Figure:	Carottier : mm	Élévation : 29.30 m

TYPE D'ÉCHANTILLON		TERMINOLOGIE QUALITATIVE		TERMINOLOGIE QUANTITATIVE		SYMBOLES		EAUX SOUTERRAINES	
CF	Cuillère fendue	Argile	< 0,002 mm	Traces	< 10 %	N	Indice de pénétration standard (ASTM D 1586)		
CFC	Échantillonnage continu	Silt	0,002 - 0,08 mm	Un peu	10 - 20 %			Date	Profondeur
CD	Carottier à diamants	Sable	0,08 - 5 mm	Adjectif (...eux)	20 - 35 %	Nc	Indice de pénétration au cône (BNQ 2501-145)	Lecture 1	m
TA	Tarière	Gravier	5 - 80 mm	et (ex: et gravier)	> 35 %			Lecture 2	m
TM	Tube à parois minces	Cailloux	80 - 200 mm	mot principal	Fraction dominante	RQD	Indice de la qualité du roc (%)	Remarques :	
TS	Tube shelby	Blocs	> 200 mm						
MA	Échantillon manuel								
ÉTAT DE L'ÉCHANTILLON		CARACTÉRISTIQUES MÉCANIQUES DES SOLS				INDICE DE QUALITÉ DU ROC		ESPACEMENT DES DISCONTINUITÉS	
	Remanié	COMPACTITÉ	INDICE "N"	CONSISTANCE	Cu OU Su (kPa)	QUALIFICATIF	RQD	Très serré	< 20 mm
	Intact (tube à parois minces)	Très lâche	0 - 4	Très molle	< 12	Très mauvaise	< 25 %	Serré	20 - 60 mm
		Lâche	4 - 10	Molle	12 - 25	Mauvaise	25 - 50 %	Rapproché	60 - 200 mm
	Perdu	Compacte	10 - 30	Ferme	25 - 50	Moyenne	50 - 75 %	Moyennement espacé	200 - 600 mm
		Dense	30 - 50	Raide	50 - 100	Bonne	75 - 90 %	Espacé	600 - 2000 mm
	Carotté (forage au diamant)	Très dense	> 50	Très raide	100 - 200	Excellente	90 - 100 %	Très espacé	2000 - 6000 mm
				Dure	> 200			Éloigné	> 6000 mm

STRATIGRAPHIE					ÉCHANTILLONS						NIVEAU D'EAU / VENUE D'EAU		ESSAIS		REMARQUES	
PROFONDEUR (m)	PROFONDEUR (pi)	ÉLÉVATION (m) / PROFONDEUR (m)	DESCRIPTION DES SOLS ET DU ROC	SYMBOLE	ÉTAT	TYPE N°	SOUS - ÉCHANTI.	CALIBRE	RECUPÉRATION (%)	N - RQD	Essai de pénétration standard COUPS/150mm					
		29.30														
		0.00 29.22 0.08	Remblai: Criblure de pierre.				A									
		28.89 0.41	Gravier et sable silteux; gris, compact.			CF-1	B	H	96	34	38-23-11-9		AG			Nc= 11
			Silt et sable (ML); brun-gris, humide.				C									
1						CF-2		N	63	10	9-5-5-6		AG, W= 18,4%			Nc= 6
		27.93 1.37	Sol naturel: Silt, un peu d'argile et de sable; brun-gris, humide à saturé.				A									
5						CF-3	B	N	75	7	4-3-4-6		AG, S, W= 19,1%			Nc= 4
2																
						CF-4		N	67	7	2-2-5-6		W= 32,1%			Nc= 4
		26.86 2.44	Fin du forage.													
3		10														
4																
15																

Remarques générales: **Nc: Indice de pénétration corrigé.**Vérifié par : **B. Godé**Date : **2016-05-30**





Projet: Barrage Fryer	Localisation : X : Y :	Sondage : F16-10 Page : 1 de 1
No. projet: 159000020	Type de sondage : Forage à percussion	Date de début : 2016-05-11
Client: Agence Parcs Canada	Équipement : Diedrich D-120	Inspecteur : C. Marcoux
Site: Piste cyclable	Tubage : mm	Profondeur : 2.44 m
Figure:	Carottier : mm	Élévation : 29.18 m

TYPE D'ÉCHANTILLON		TERMINOLOGIE QUALITATIVE		TERMINOLOGIE QUANTITATIVE		SYMBOLES		EAUX SOUTERRAINES	
CF	Cuillère fendue	Argile	< 0,002 mm	Traces	< 10 %	N	Indice de pénétration standard (ASTM D 1586)		
CFC	Échantillonnage continu	Silt	0,002 - 0,08 mm	Un peu	10 - 20 %			Date	Profondeur
CD	Carottier à diamants	Sable	0,08 - 5 mm	Adjectif (...eux)	20 - 35 %	Nc	Indice de pénétration au cône (BNQ 2501-145)	Lecture 1	m
TA	Tarière	Gravier	5 - 80 mm	et (ex: et gravier)	> 35 %			Lecture 2	m
TM	Tube à parois minces	Cailloux	80 - 200 mm	mot principal	Fraction dominante	RQD	Indice de la qualité du roc (%)	Remarques :	
TS	Tube shelby	Blocs	> 200 mm						
MA	Échantillon manuel								
ÉTAT DE L'ÉCHANTILLON		CARACTÉRISTIQUES MÉCANIQUES DES SOLS				INDICE DE QUALITÉ DU ROC		ESPACEMENT DES DISCONTINUITÉS	
	Remanié	COMPACTITÉ	INDICE "N"	CONSISTANCE	Cu OU Su (kPa)	QUALIFICATIF	RQD	Très serré	< 20 mm
	Intact (tube à parois minces)	Très lâche	0 - 4	Très molle	< 12	Très mauvaise	< 25 %	Serré	20 - 60 mm
	Perdu	Lâche	4 - 10	Molle	12 - 25	Mauvaise	25 - 50 %	Rapproché	60 - 200 mm
	Carotté (forage au diamant)	Compacte	10 - 30	Ferme	25 - 50	Moyenne	50 - 75 %	Moyennement espacé	200 - 600 mm
		Dense	30 - 50	Raide	50 - 100	Bonne	75 - 90 %	Espacé	600 - 2000 mm
		Très dense	> 50	Très raide	100 - 200	Excellente	90 - 100 %	Très espacé	2000 - 6000 mm
				Dure	> 200			Éloigné	> 6000 mm

STRATIGRAPHIE					ÉCHANTILLONS					ESSAIS				
PROFONDEUR (m)	PROFONDEUR (pi)	ÉLÉVATION (m) / PROFONDEUR (m)	DESCRIPTION DES SOLS ET DU ROC	SYMBOLE	ÉTAT	TYPE N°	SOUS - ÉCHANTI.	CALIBRE	RECUPÉRATION (%)	N - RQD	Essai de pénétration standard COUPS/150mm	NIVEAU D'EAU / VENUE D'EAU	REMARQUES	
		29.18												
		0.00 29.10 0.08	Remblai: Criblure de pierre; gris.				A							
		28.72 0.46	Sable et gravier silteux (SM); gris-brun, compact.			CF-1	B	H	96	43	40-30-13-7		Nc= 14	
			Silt et sable (ML), un peu de gravier; brun-gris, humide, lâche.				C							
1						CF-2		N	52	13	7-5-8-7	AG, W= 10,3%	Nc= 8	
		27.96 1.22	Sol naturel: Silt argileux (CL), un peu de sable à sableux; gris-brun, humide.			CF-3		N	71	5	4-2-3-4	W= 26,8%	Nc= 3	
5														
						CF-4		B	54	2	1-1-1-2			
		26.74 2.44	Fin du forage.											
3	10													
4														
15														

Remarques générales: Nc: Indice de pénétration corrigé.	Vérifié par : B. Godé
	Date : 2016-05-30

Projet: Barrage Fryer	Localisation : X : Y : Type de sondage : Forage à percussion	Sondage : F16-11
No. projet: 159000020	Équipement : Diedrich D-120	Page : 1 de 1
Cliant: Agence Parcs Canada	Tubage : mm	Date de début : 2016-05-11
Site: Piste cyclable	Carottier : mm	Inspecteur : C. Marcoux
Figure:		Profondeur : 2.44 m
		Élévation : 29.00 m

TYPE D'ÉCHANTILLON		TERMINOLOGIE QUALITATIVE		TERMINOLOGIE QUANTITATIVE		SYMBOLES		EAUX SOUTERRAINES	
CF	Cuillère fendue	Argile	< 0,002 mm	Traces	< 10 %	N	Indice de pénétration standard (ASTM D 1586)		
CFC	Échantillonnage continu	Silt	0,002 - 0,08 mm	Un peu	10 - 20 %			Date	Profondeur
CD	Carottier à diamants	Sable	0,08 - 5 mm	Adjectif (...eux)	20 - 35 %	Nc	Indice de pénétration au cône (BNQ 2501-145)	Lecture 1	m
TA	Tarière	Gravier	5 - 80 mm	et (ex: et gravier)	> 35 %			Lecture 2	m
TM	Tube à parois minces	Cailloux	80 - 200 mm	mot principal	Fraction dominante	RQD	Indice de la qualité du roc (%)	Remarques :	
TS	Tube shelby	Blocs	> 200 mm						
MA	Échantillon manuel								
ÉTAT DE L'ÉCHANTILLON		CARACTÉRISTIQUES MÉCANIQUES DES SOLS				INDICE DE QUALITÉ DU ROC		ESPACEMENT DES DISCONTINUITÉS	
	Remanié	COMPACTITÉ	INDICE "N"	CONSISTANCE	Cu OU Su (kPa)	QUALIFICATIF	RQD	Très serré	< 20 mm
	Intact (tube à parois minces)	Très lâche	0 - 4	Très molle	< 12	Très mauvaise	< 25 %	Serré	20 - 60 mm
	Perdu	Lâche	4 - 10	Molle	12 - 25	Mauvaise	25 - 50 %	Rapproché	60 - 200 mm
	Carotté (forage au diamant)	Compacte	10 - 30	Ferme	25 - 50	Moyenne	50 - 75 %	Moyennement espacé	200 - 600 mm
		Dense	30 - 50	Raide	50 - 100	Bonne	75 - 90 %	Espacé	600 - 2000 mm
		Très dense	> 50	Très raide	100 - 200	Excellente	90 - 100 %	Très espacé	2000 - 6000 mm
				Dure	> 200			Éloigné	> 6000 mm

STRATIGRAPHIE				ÉCHANTILLONS							NIVEAU D'EAU / VENUE D'EAU		ESSAIS		REMARQUES	
PROFONDEUR (m)	PROFONDEUR (pi)	ÉLÉVATION (m) / PROFONDEUR (m)	DESCRIPTION DES SOLS ET DU ROC	SYMBOLE	ÉTAT	TYPE N°	SOUS - ÉCHANTI.	CALIBRE	RECUPÉRATION (%)	N - RQD	Essai de pénétration standard COUPS/150mm			AG : analyse granulo. S : sédimentométrie C : consolidation oedo. W : teneur en eau W _L : limite liquide W _p : limite plastique Dr : densité relative k : perméabilité f'c : compression simple MO : matière organique AC : analyses chimiques		X : N (pen. standard) ▽ : Nc (pen. dyn.) ■ : Cu intact □ : Cu remanié ◆ : Su intact ◇ : Su remanié
		29.00 0.00 28.96 0.04	Enrobé bitumineux. Remblai: Sable et gravier (SM), un peu de silt; noir, compact.			CF-1		H	100	40	14-22-18-14 /N1: 11 cm			AG, W= 4,9%		Nc= 13
		28.39 0.61	Sable silteux graveleux (SM); brun-gris, humide, lâche.			CF-2		N	13	6	6-3-3-4			W= 5,5%		Nc= 4
		27.78 1.22	Sol naturel: Argile silteuse sableuse (CH); grise, humide.			CF-3		N	46	6	3-3-3-5			AG, S, W= 22,6%		Nc= 4
		26.56 2.44	Fin du forage.			CF-4		B	0	2	1-1-1-2					
						</										

Remarques générales: Nc: Indice de pénétration corrigé.	Vérifié par : B. Godé
	Date : 2016-05-30

APPENDIX 02

02 – PLAN OF BATHYMETRY



SCEAUX

SEALS

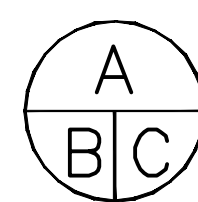
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EMIS POUR SOUMISSION
ISSUED FOR SUBMISSION

2016-07-18

révisions
revisions

date



A no. du détail
detail no.

B no.de la feuille--où détail
exigé
sheet no. -- where detail
required

C no. de la feuille--où détaillé
sheet no. -- where detailed

Projet

Project

PARCS CANADA
PARKS CANADA

BARRAGE FRYER

FRYER'S CONTROL DAM

Dessin

Drawing

ANNEXE
ANNEX

BATHYMÉTRIE
BATHYMETRY

Conçu par

Designed by

Dessiné par

Drawn by

Approuvé par

Approved by

Soumission

Tender

Administrateur de projets APC

PCA Project Manager

No de projet

Project number

No de contrat

Contract number

APC

PCA

Norm du fichier

File name

No de classement

No de plan ou dessin

File name

No feuille

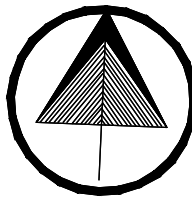
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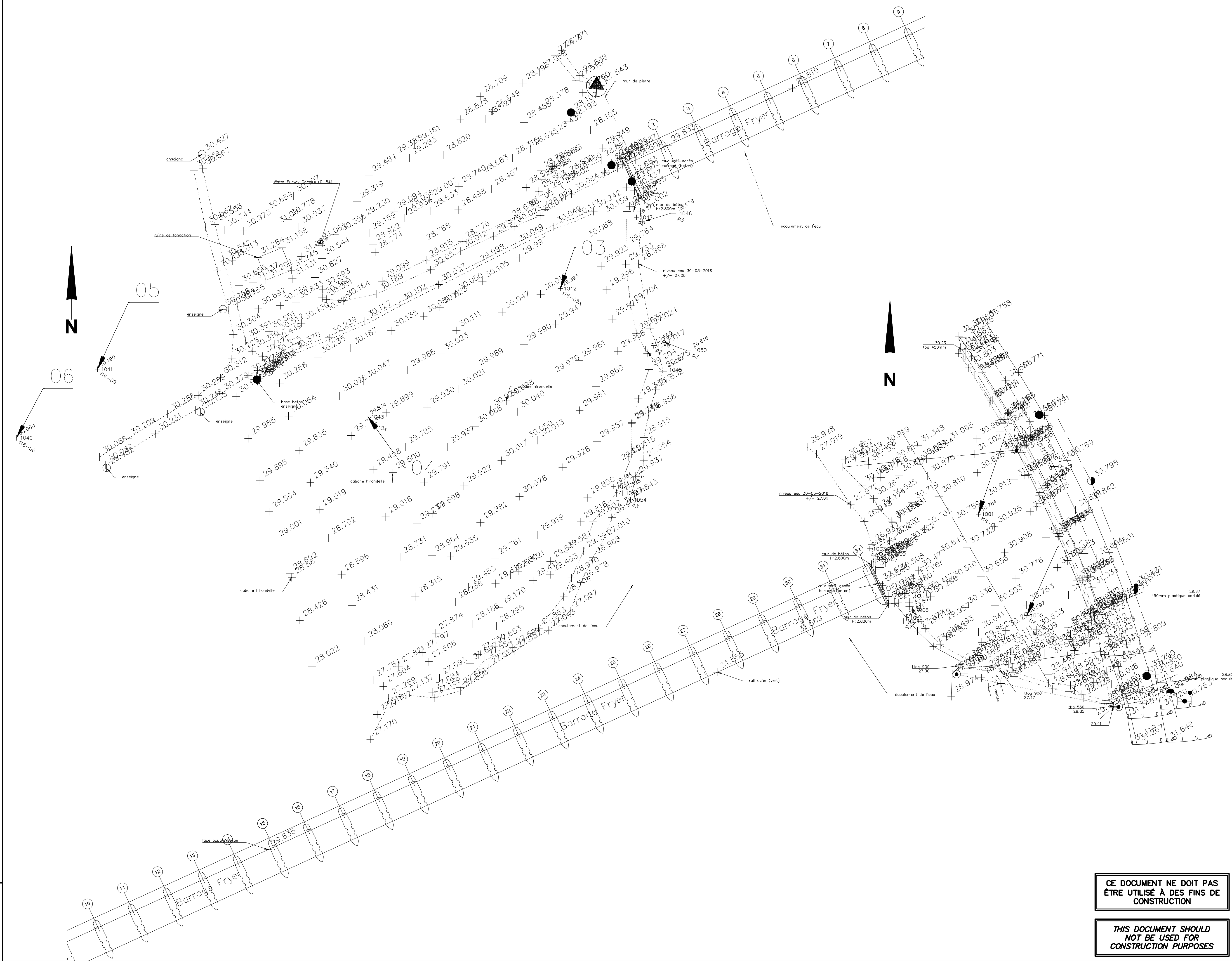
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APPENDIX 03

03 SURVEY PLAN OF MOBILIZATION'S ZONES



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