WASTEWATER TREATMENT SYSTEM UPGRADE – CAP TOURMENTE NATIONAL WILDLIFE AREA

Technical Specifications

Project number: R.113105.001

Prepared for:
Publics Services and Procurement Canada

For Tender – Rev 0

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END OF SECTION

Part 1 General Information

1.1 ORDER OF EXECUTION OF WORK

.1 Carry out the work in phases so that the Department's Representative has continuous use of the site during the Work.

.2 Coordinate the schedule of progress of the Work with the occupancy of the site. **Mobilization may not begin until Monday, October 31, 2022.**

.3 Scope of Work

- .1 Culvert replacement in the vicinity of de la Friponne road and next to the wastewater treatment site;
- .2 Work on the wastewater treatment site;
- .3 Work on the Interpretive Centre pump station;
- .4 Work on the workshop pump station;
- .5 Performance testing upon reopening to the public in 2023;

.4 Maintain access for firefighting purposes and provide firefighting capabilities

1.2 USE OF THE PREMISES BY THE CONTRACTOR

.1 The site may be used without restriction until substantial completion of the works

.2 Use of premises shall be restricted to areas necessary for the performance of the work, storage and access when allowed :

- .1 Partial occupancy of the premises by the Department Representative;
- .2 Use of the premises by the public;

.3 Coordinate the use of the premises as directed by the Department Representative

.4 Locate and pay for additional work or storage areas required to perform the work under this contract.

.5 Remove or modify the existing Work to avoid damage to the parts of the work that remain in place.

.6 Repair or replace as directed by the Departmental Representative, for the purpose of connection to or harmonization with the existing work of an adjacent work, those portions of the existing work that have been altered during construction.

.7 Upon completion of the work, the existing work shall be in a condition equivalent to or better than the condition it was in before the work started.

1.3 OCCUPANCY OF THE PREMISES BY THE DEPARTMENTAL REPRESENTATIVE

.1 The Departmental Representative will occupy the site for the duration of the construction and will continue normal operations during this period.

.2 Cooperate with the Departmental Representative in scheduling the work to minimize conflicts and facilitate the Departmental Representative's use of the site.

1.4 EXISTING UTILITY SERVICES

.1 The contractor shall locale all underground utilities and private services prior to the commencement of the work by qualified firms (Info-excavation and/or other private firms). If deemed necessary, the hydro-suction method will be used to visually confirm the position of underground pipes before digging.

.2 Prior to interrupting any utility services, notify the Departmental Representative and the utility companies involved and obtain necessary approvals.

.3 If tapping of or connections to existing utility lines are required, provide the Departmental Representative with 48 hours advance notice of the planned interruption of electrical or mechanical services. Ensure that the duration of interruptions is as short as possible. Perform the Work at times determined by the local authority having jurisdiction, with minimum interference with pedestrian and vehicular traffic.

.4 Prior to commencement of work, identify the extent and location of utility lines in the work area and advise the Departmental Representative.

.5 Submit to the Departmental Representative for approval a schedule for the shutdown or closure of active facilities or works including the interruption of communications services or power supply. Adhere to the approved schedule and notify parties affected by such inconvenience.

.6 Provide temporary utility services as directed by the Departmental Representative to maintain critical building and tenant systems.

- .1 Four (4) toilets for the workshop (Administrative Centrer) from November 1st 2022 to minimally December 1st 2022.
- .2 Two (2) toilets for the interpretation center from November 1st 2022 to minimally December 1st 2022.

.7 When unlisted utility lines are discovered, immediately notify the Departmental Representative and document.

.8 Protect, relocate, or maintain functional utility lines. If non-functional lines are discovered during the course of the work, block them off in a manner authorized by the authorities having jurisdiction.

.9 Record the location of utility lines that are maintained, relocated or abandoned.

.10 Construct barriers in accordance with Section 01 56 00 Temporary Access and Protective Works.

.11 The Contractor shall be responsible for maintaining safe distances from electrical installations during the performance of the Work as specified by the CNESST or other regulatory agencies having jurisdiction.

.12 If safe distances to electrical installations as specified by CNESST cannot be maintained, or if overhead wires encroach on or are in the vicinity of areas to be excavated and could be affected by the work, the services in question shall, if necessary, be secured or temporarily rerouted, taking care to minimize service interruptions to the subscribers connected to them. Once the rehabilitation work has been completed, the services that have been diverted must be replaced in their original locations, again with minimal disruption to service.

1.5 REQUIRED DOCUMENTS

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

.1 Contract Drawings.
.2 Specifications.
.3 Addendum.
.4 Revised Shop Drawings.
.5 List of unreviewed shop drawings.
.6 Change orders.
.7 Other contract changes.
.8 Field/Laboratory test reports.
.9 Copy of approved schedule.
.10 Health and Safety Plan and other safety related documents.
.11 Other documents as indicated.

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 UNIT PRICE OR LUMP SUM

.1 The total amount of the contract shall be broken down according to a description of certain remunerated work on a unit basis and the balance of the work and/or special requirements and/or other expenses related to the contract shall be remunerated according to a single lump sum.

.2 Each of the unit prices as well as the single lump sum submitted must include, unless otherwise specified in the description of the unit items, all expenses, works, disbursements, payments, direct or indirect costs, mobilizations, demobilizations and acts, all facts, as well as all liabilities, obligations, omissions, and errors of the Contractor related to the performance of the contract. These prices also include all overhead costs of the company: administration, profits, profits, insurance, contributions, interest, rents, taxes, and other incidental expenses. It must include loss and damage that may result from the nature of the work, fluctuations in prices and wages, company risks, strikes, delays not attributable to the Departmental Representative, restrictions on transport, accidents, and the action of the elements of nature.

.3 The unit prices as well as the single lump sum submitted at the time of submission represent the entire remuneration of the Contractor and incorporate the cost elements of any kind for the entire project. The cumulative prices submitted includes all costs for the work shown in the drawings and described in the quote, also including the costs for all the special requirements of the construction quote or the general clauses of the contract. The Contractor must prepare its bid diligently to ensure that the costs submitted for all work and general or specific requirements of the contract are included in a relevant item of its bid. No request for additional costs for the claim of work shown in the drawings or described in the quote, the description of which is not explicitly mentioned in one of the descriptions of the items of the bid slip, will be admissible.

1.2 DEFINITIONS

.1 Lump sum: when the work is determined in a precise and detailed way and a price is agreed and accepted by both parties for the whole.

.2 Unit price: when the specifications for the work are determined in a precise and detailed manner and all quantities on the slip are provided as an estimate.

1.3 DESCRIPTION OF THE ARTICLES FROM THE UNIQUE LUMP SUM TABLE

.1 Article 1: Removal and provision of sanitary pipes and aqueducts, including plugs.

.1 This item includes off-site removal and disposal, excavation and backfilling to the sewer and water line infrastructure line, as well as all other items required by the "Tender Documents".

.2 This item is paid per linear meter.

.2 Article 2: Filling of abandoned pipes with concrete grout.

.1 This item includes the supply of materials and labor to fill abandoned pipes with lean concrete, as well as all other items required by the "Tender Documents".

.2 This item is paid per cubic meter.

.3 Article 3: Excavation and fill for laying pipe, 1 pipe per trench.

.1 This item includes excavation and dewatering of trenches, siting, coating, backfilling to the infrastructure line, as well as all other elements required by the "Tender Documents".

.2 This item is paid per linear meter

.4 Article 4: Connection, construction, and installation of a sanitary sewer line - 100 mm dia. PVC DR-26

.1 This item includes the supply and installation of the sanitary sewer line including accessories, plugs, various connecting parts, monolithic tees, tests, deviations of existing pipes if required, as well as all other elements required by the "Tender Documents".

.2 This item is paid per linear meter

.5 Article 5: Transition, connection, supply, and installation of a sanitary sewer line - 150 mm dia. PVC DR-26

.1 This item includes the supply and installation of the sanitary sewer line including accessories, plugs, various fitting parts, transition accessories with adjacent diameters, monolithic tees, tests, deviations of existing pipes if required, as well as all other elements required by the "Tender Documents".

.2 This item is paid per linear meter.

.6 Article 6: Rigid insulation HI-60 – 75 mm thick

.1 This item includes, but is not limited to, the supply and installation of extruded insulation in 415 kPa/60 PSI resistance sheet. It corresponds to a sheet thickness of 75 mm.

.2 This item is paid per square meter (m²). The number of square meters paid will be adjusted according to the thickness indicated in the plans and specifications. By example, if 99 m² of 25 mm thick insulation are installed or 66 m² of 50 mm thick insulation, the area should be 33 m².

.7 Article 7: Farm fence with barbed wire as the existing one.

.1 This item must include, but is not limited to, the supply of the required materials and the installation of the wire fence, like the existing model and the indications of the plans and specifications.

.2 This item is paid per linear meter.

.8 Article 8: Electric trench, PVC duct and conductor of diameter as indicated in plan E01.

.1 This item must include topsoil stripping, trench excavation and dewatering, siting, coating, backfilling to the infrastructure line and supplying the duct and driver's passage.

.2 This item is paid per linear meter.

1.4 DESCRIPTION OF OPTIONAL ITEMS PAID IN LUMP SUMS

.1 Article O-1: Supply and installation of a sanitary sewer line – Ø250 mm dia. HDPE, smooth interior, watertight R210 kPa including excavation, backfill for pipe laying, 1 pipe and layout of existing concrete pipe and

.1 This H This item includes the supply and installation of the sanitary sewer line including accessories, plugs, various connecting parts, deviations of existing pipes if required, as well as all other elements required by the "Tender Documents". The item includes excavation and dewatering of trenches, siting, coating, backfilling to the infrastructure line, and removal and disposal of abandoned pipes inside the trench. This price also includes the drilling of the RS-4 manhole if required, propping, pumping, transitions if applicable, transportation of surplus materials to an approved location and compaction of backfill materials as well as backfill without removal, if applicable, as well as all other elements required by the "Tender Documents".

.2 This item is paid for on a lump sum basis and must be approved in advance by the Ministry Representative.

1.5 REQUEST OF PAYMENT

.1 Submit progress claims each month as work progress

.2 Progress claims shall be dated the last day of the agreed upon monthly payment period. The amount requested shall be the value of the Work performed and products delivered to the site of the Work on that date, prorated to the Contract Price

.3 Submit to the Departmental Representative, at least 14 days prior to the first progress claim, a breakdown of the amounts due for the various parts of the Work, and constituting the amount of the contract price, to facilitate the evaluation of claims for payment.

1.6 STATEMENT OF AMOUNTS DUE

.1 The statement of account shall be prepared in accordance with such supporting documentation as the Departmental Representative may reasonably require. Once approved by the Departmental Representative, the statement of account may form the basis for claims for payment.

.2 Attach a statement based on the statement of amounts due and the statutory declaration to each claim for payment.

.3 Claims for commodities that have been delivered to the site of the Work, but have not yet been incorporated into the Work, shall be supported by such evidence as the Departmental Representative may reasonably request to establish the value of the commodities and certify their delivery.

1.7 GRADUAL PAYMENT HOLD

.1 Where permitted by law, and in cases where the Departmental Representative has certified that the work of the subcontractor or supplier has been performed prior to Substantial Completion of the Work, the Owner shall, on the day following the date of expiration of the holdback period stipulated for such work in the lien statute in effect at the site of the

Work, pay the Contractor the amount of the holdback with respect to the work of such subcontractor or the products supplied by such supplier.

.2 In addition to the preceding paragraph and the wording of the certificates, the Contractor shall ensure that the Subcontractor's work or products are protected until the issuance of a final payment certificate, and the Contractor shall be responsible for correcting all defects or instances of non-completion, whether such defects or instances of non-completion are visible at the time the certificates are issued.

1.8 FINAL PAYMENT

.1 The Contractor shall submit a request for final payment when the Work is considered complete.

.2 No later than ten (10) days after receipt of a request for final payment, the Departmental Representative will conduct a walk-through of the Work to verify the merits of the request. Within seven (7) days of the walk-through, the Departmental Representative will notify the Contractor of the acceptance or denial of the claim and, if the claim is denied, the reasons for denial.

.3 If the Departmental Representative finds that the Contractor's request for final payment is justified, the Departmental Representative will issue a final payment certificate.

Part 2 Product

2.1 NOT USED.

Not Used.

Part 3 Execution.

3.1 NOT USED.

Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All sections of the specifications.

1.2 DESIGNATION AND PAYMENT

.1 The Departmental Representative shall designate the laboratory to carry out the tests, and the Contracting Authority shall assume the costs of its services, except for the following.

- .1 Inspections and tests required by laws, ordinances, rules, regulations, or public order orders.
- .2 Inspections and tests carried out exclusively for the convenience of the Contractor.
- .3 Testing, development and balancing of handling systems as well as electrical and mechanical networks and installations.
- .4 Factory tests and certificates of conformity.
- .5 The tests to be carried out by the Contractor under the supervision of the Departmental Representative.
- .6 The following additional tests:
  - .1 Televised inspections and deformation verification of the concrete sanitary sewer line between the pond outlet and the ditch.

.2 Where the inspections or tests carried out by the designated testing laboratory reveal that the works do not comply with the requirements of the Contract, the Contractor shall pay the cost of any additional tests or inspections that the Departmental Representative may request to verify that the corrections made are acceptable.

1.3 CONTRACTOR'S RESPONSIBILITIES

.1 Provide the necessary manpower and facilities to achieve the following.

- .1 Provide access to works to be inspected and tested.
- .2 Facilitate inspections and testing.
- .3 Rehabilitate structures disturbed during inspections and tests.
- .4 Allow laboratory staff to store equipment and process samples.

.2 Inform the Departmental Representative at least 48 hours in advance of the operations so that he can make an appointment with laboratory staff and establish the testing schedule.

.3 Where materials are to be tested, send the requested quantity of representative samples to the testing laboratory.

.4 Pay for the cost of work performed to uncover and rehabilitate works that were covered before the required inspections or tests were conducted and approved by the Departmental Representative.

Part 2 Products

2.1 NOT USED.

.1 Not Used.

Part 3 Execution

3.1 NOT USED.

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All sections of the specifications.

1.2 ADMINISTRATIVE PROCEDURES

.1 Attend site meetings, at the request of the Departmental Representative.

.2 Meetings will be held by videoconference, unless otherwise noted.

.3 Representatives of the Contractor, subcontractors and suppliers attending project meetings are authorized and authorized to speak on behalf of the parties they represent.

1.3 PRE-WORK MEETING

.1 Within ten (10) days of the award of the contract, a meeting of the parties to the contract will be organized to discuss the administrative procedures and define the responsibilities of each.

.2 The Departmental Representative, the Consultant, the Contractor, the main subcontractors, the site inspectors, and the supervisors must be present at this meeting.

.3 Agenda items

- .1 Appointment of the official representatives of the participants in the work.
- .2 Schedule of work, according to section 01 32 16.19 - Work scheduling - Bar chart (GANTT).
- .3 Schedule for submission of shop drawings, product samples and colour samples, according to section 01 33 00 - Documents and samples to be submitted.
- .4 Requirements for temporary facilities, site signage, offices, sheds and storage facilities, utilities, and fencing, as per section 01 52 00 - Site facilities.
- .5 Safety on the construction site, according to section 01 56 00 - Temporary access and protection works.
- .6 Proposed amendments, change orders, procedures, required approvals, percentages of margin allowed, extensions of deadlines, overtime and other administrative arrangements.
- .7 Products supplied by the Client.
- .8 Drawings to be included in the project file, according to section 01 33 00 - Documents and samples to be submitted.
- .9 Maintenance manuals, according to section 01 78 00 - Documents and items to be submitted upon completion of work.
- .10 Procedures for the delivery and acceptance of work, and guarantees, according to section 01 78 00 - Documents and items to be submitted upon completion of work.
- .11 Requests for monthly deposits, administrative procedures, photos, deductions.
- .12 Designation of inspection and testing bodies and firms.
- .13 Insurance, policy statements.

1.4 PROGRESS MEETINGS

.1 Meetings will be held every two (2) weeks during the work.

.2 The main subcontractors participating in the work as well as the Departmental Representative, the Consultant and the Client must be present at these meetings.

.3 Agenda items

- .1 Reading and approval of the minutes of the previous meeting.
- .2 Review of progress since the previous meeting.
- .3 On-site observations; problems and conflicts.
- .4 Issues impacting the work schedule.
- .5 Review of delivery schedules for off-site manufactured products.
- .6 Procedures and corrective measures to make up for delays to allow for compliance with the established schedule.
- .7 Revision of the work schedule.
- .8 Review of the progress schedule during the successive stages of the work.
- .9 Revision of the schedule for the submission of required documents and samples; speeding up the process as needed.
- .10 Maintenance of quality standards.
- .11 Review of the proposed changes and their potential impact on the schedule and completion date.
- .12 Diverse.

Part 2 Products

2.1 NOT USED.

.1 Not Used.

Part 3 Execution

3.1 NOT USED.

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All sections of the specifications.

1.2 DEFINITIONS

.1 Activity: Specified work performed as part of a project. An activity normally has an expected duration, an expected cost and an anticipated resource requirement. Activities can be subdivided into tasks.

.2 Bar chart (GANTT chart): A graphical representation of data related to a project's timeline. In the usual bar chart, the activities or other elements of the project are presented from top to bottom, to the left of the graph while the dates are presented at the top, from left to right; the duration of each activity is indicated by horizontal segments placed between the dates. In general, the bar chart is generated from a commercially available computerized project management system.

.3 Baseline: An approved initial plan (for a project, work package, or activity), considering approved changes to the project scope.

.4 Work Week: Five (5) day week, Monday to Friday, defining the business days for the purpose of submitting the bar chart (GANTT chart).

.5 Duration: The required number of work periods (excluding holidays and other non-working periods) for the performance of an activity or other element of the project. The duration is usually expressed in working days or working weeks.

.6 Overall Plan: Summary program outlining key activities and milestones.

.7 Milestones: An important event in the realization of the project, most often corresponding to the completion of an important product.

.8 Timeline: Dates set for the completion of activities and milestones. Dynamic and detailed program of tasks or activities necessary to achieve project milestones. The monitoring and control process is based on the implementation schedule for the implementation and control of activities; it defines the decisions that will be made throughout the duration of the project.

.9 Scheduling - Project Planning, Monitoring and Control: A comprehensive system managed by the Departmental Representative to monitor the execution of work against specific milestones or milestones.

1.3 REQUIREMENTS

.1 Ensure that the plan and schedule are usable and within the prescribed duration of the contract.

.2 The plan must provide for the work to be carried out according to the prescribed milestones within the agreed time.

.3 Limit the duration of activities to approximately ten (10) working days to allow for progress reporting.

.4 The award of the contract or the start date of the work, the pace of progress of the work, the issuance of the provisional certificate of completion and the final certificate of completion are defined stages of the project and are essential conditions of the contract.

1.4 DOCUMENTS/ SAMPLES TO BE SUBMITTED FOR APPROVAL/ INFORMATION

.1 Submit the required documents and samples in accordance with section 01 33 00 - Documents and samples to be submitted.

.2 Submit to the Departmental Representative, no later than ten (10) business days after the contract is awarded, a bar graph (GANTT chart) that will serve as an overall plan and will be used for work planning, monitoring and progress reporting.

.3 Submit the implementation schedule to the Departmental Representative no later than five (5) business days after acceptance of the master plan.

1.5 PROJECT MILESTONES

.1 Project milestones are the intermediate objectives set out in the implementation schedule. The list below is non-exhaustive, and the Entrepreneur must complete it to ensure a good understanding of the steps.

- .1 The pre-work meeting must be held within ten (10) days following the mandate confirmation.
- .2 Mobilization may not begin until Monday, October 31, 2022 for environmental protection.
- .3 The work, except for the site restoration and performance testing, must be completed by 16 December 2022 at the latest.
- .4 The provisional certificate of completion (substantial completion) of the work must be issued no later than December 23, 2022.
- .5 If hydraulic seeding is done in Spring, the work must be done upon soil thaw and before June 15, 2023.
- .6 Site restoration work must be completed by July 1st 2023.
- .7 Performance testing must be completed by August 1st 2023.

1.6 OVERALL PLAN

.1 Structure the execution schedule in such a way as to allow for the orderly planning, organization, and execution of work according to the bar graph (GANTT chart).

.2 The Departmental Representative will review the schedule and provide it to the Contractor no later than five (5) business days.

.3 If the schedule is deemed unusable, revise it and resubmit it no later than five (5) business days after receiving it.

.4 The agreed revised schedule will become the plan, which will serve as a reference for updates.

1.7 TIMETABLE FOR IMPLEMENTATION

.1 Develop a detailed implementation schedule based on the plan.

.2 The detailed implementation schedule shall include at least the steps corresponding to the following activities.

.1 Contract award.
.2 Workshop drawings, samples, ordering of materials.
.3 Materials supplied with a long delivery time.
.4 Mobilization.
.5 Culverts replacement.
.6 Excavation.
.7 Demolition.
.8 Installation of tanks.
.9 Installation of pipes and components of the wastewater treatment system.
.10 Leakage and diffusion tests of air.
.11 Backfilling
.12 Electrical work for the wastewater treatment system.
.13 Interruption of services.
.14 Connection of new pipes to existing pipes.
.15 Work to improve pumping stations.
.16 Replacement of pumping station control panels.
.17 Commissioning.
.18 Restoration and seeding work.
.19 Treatment performance testing .

1.8 PROGRESS REPORTS

.1 Update the schedule one (1) time per week to reflect changes to activities, completion of activities, and activities in progress.

.2 Attach to the schedule a narrative report that indicates the status of the work, compares progress against the baseline, and presents current forecasts, anticipated delays, impacts of these elements, and possible mitigation measures.

1.9 PROJECT MEETINGS

.1 Discuss the implementation schedule at periodic meetings held on site; identify activities that are overdue and provide ways to catch up. Activities whose start or end date exceeds the respective approved dates in the reference calendar are overdue.

.2 Also discuss delays due to bad weather and negotiate measures to make up for them.

Part 2 Products

2.1 NOT USED.

.1 Not Used.

Part 3 Execution

3.1 NOT USED.

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All sections of the specifications.

1.2 ADMINISTRATIVE PROCEDURES

.1 As soon as possible and in a predetermined order in order not to delay the execution of the work, submit the required documents and samples to the Departmental Representative for review. A delay in this respect shall not constitute a sufficient reason for obtaining an extension of the time limit for carrying out the work and no such request shall be accepted.

.2 Do not undertake work for which documentation and samples are required until the examination of all submitted exhibits is completely completed.

.3 The characteristics indicated on shop drawings, data sheets and samples of products and structures must be expressed in metric units (SI).

.4 When the elements are not produced or manufactured in metric units (SI) or the characteristics are not given in metric units (SI), converted values can be accepted.

.5 Review documents and samples before handing them over to departmental representative. Through this due diligence, the Contractor confirms that the requirements applicable to the Work have been or will be determined and verified, and that each of the documents and samples submitted has been reviewed and found to comply with the requirements of the Work and the Contract Documents. Documents and samples that are not stamped, signed, dated, and identified in connection with the project will be returned without being reviewed and will be considered rejected.

.6 Notify the Departmental Representative in writing, at the time of filing the documents and samples, of any deviations they present from the requirements of the Contractual Documents and explain the reasons for them.

.7 Ensure the accuracy of the measurements taken on site in relation to the adjacent structures affected by the work.

.8 The fact that the documents and samples submitted are reviewed by the Departmental Representative does not relieve the Contractor of its responsibility to transmit complete and accurate documents.

.9 The fact that the documents and samples submitted are examined by the Departmental Representative does not relieve the Contractor of its responsibility to transmit documents that comply with the requirements of the Contractual Documents.

.10 Keep a verified copy of each document submitted on site.

1.3 SHOP DRAWINGS AND PRODUCT DATA

.1 The term "shop drawings" means the drawings, diagrams, illustrations, tables, performance or performance graphs, pamphlets, and other documentation that the Contractor must provide to show in detail a part of the work concerned.

.2 Drawings must bear the seal and signature of a qualified competent engineer recognized or licensed to practise in the province of Quebec, Canada.

.3 Shop drawings must indicate the materials to be used and the methods of construction, fastening or anchoring to be used, and they must contain the assembly diagrams, details of the connections, the relevant explanatory notes, and any other information necessary for the execution of the work. Where works or components are connected or connected to other works or elements, indicate on the drawings that the requirements have been coordinated, regardless of the section under which the works or adjacent elements will be supplied and installed. Make references to the quote and preliminary design drawings.

.4 Allow ten (10) days for the Ministry Representative to review each batch of documents submitted.

.5 Changes to the shop drawings by the Ministry Representative are not intended to vary the contract price. If this is the case, however, notify the Ministry Representative in writing before starting the project.

.6 Make changes to the shop drawings that are requested by the Ministry Representative in accordance with the requirements of the Contractual Documents. When resubmitting drawings, notify the Departmental Representative in writing of any changes that have been made in addition to those required.

.7 Documents submitted must be accompanied by a letter of transmittal containing the following information:

- .1 the date;
- .2 the designation and number of the project;
- .3 the name and address of the Entrepreneur;
- .4 the designation of each drawing, technical sheet and sample and the number submitted;
- .5 the reference to the articles of the estimate and the plan sheet number;
- .6 any other relevant data.

.8 Documents submitted must bear or indicate the following:

- .1 the date of preparation and the dates of revision;
- .2 the designation and number of the project;
- .3 the names and addresses of the following persons:
  - .1 the subcontractor;
  - .2 the supplier;
  - .3 the manufacturer;
- .4 the Contractor's stamp, signed by the Contractor's authorized representative, certifying that the documents submitted are approved, that the measures taken on site have been

verified and that the whole complies with the requirements of the Contractual Documents;

.5 the relevant details of the portions of work concerned:

.1 materials and manufacturing details;

.2 the layout or configuration, with dimensions, including those taken on site, as well as clearances and clearances;

.3 details regarding mounting or adjustment;

.4 characteristics such as power, flow or capacity;

.5 performance characteristics;

.6 reference standards;

.7 the operational mass;

.8 wiring diagrams;

.9 single-threaded schemes and schematic schemes;

.10 links to adjacent works.

.9 Distribute copies of shop drawings and data sheets once the Departmental Representative has completed the audit.

.10 Submit one (1) electronic copy of the workshop drawings prescribed in the technical sections of the specification and as reasonably required by the Departmental Representative.

.11 If no shop drawing is required due to the use of a standard manufacturing product, submit one (1) electronic copy of the technical data sheets or manufacturer's documentation prescribed in the technical sections of the specification and required by the Departmental Representative.

.12 Submit one (1) electronic copy of the test reports prescribed in the technical sections of the specification and required by the Departmental Representative.

.1 The report signed by the official representative of the testing laboratory must attest those materials, products, or systems identical to those proposed for the work have been tested in accordance with the prescribed requirements.

.2 The tests must have been carried out within three (3) years prior to the date of award of the contract.

.13 Submit one (1) electronic copy of the certificates prescribed in the technical sections of the specification and required by the Departmental Representative.

.1 The documents, printed on official correspondence paper of the manufacturer and signed by a representative of the latter, must certify that the products, materials, and systems supplied comply with the requirements of the specification.

.2 Certificates must bear a date after the award of the contract and indicate the designation of the project.

.14 Submit one (1) electronic copy of the manufacturer's instructions prescribed in the technical sections of the specification and required by the Ministry Representative.

.1 Pre-printed documents describing the method of installation of products, equipment, and systems, including specific instructions and material safety data sheets indicating impedances, risks, and safety measures to be put in place.

.15 Submit one (1) electronic copy of the manufacturer's on-site inspection reports prescribed in the technical sections of the specification and required by the Ministry Representative.

.16 Reports of tests and verifications carried out by the manufacturer's representative for the purpose of confirming the conformity of the products, materials, or systems installed with the manufacturer's instructions.

.17 Submit one (1) electronic copy of the operations and maintenance records prescribed in the technical sections of the specification and required by the Departmental Representative.

.18 Delete information that does not apply to the work.

.19 In addition to current information, provide any additional details that apply to the work.

.20 When the shop drawings have been verified by the Ministry Representative and no errors or omissions have been detected or only minor corrections have been made, the electronic copy is returned, and the shaping and installation work can then be undertaken. If the shop drawings are rejected, the annotated copy(s) shall be returned, and the corrected shop drawings shall be resubmitted in accordance with the above indications before the shaping and installation work can be undertaken.

.21 PWGCS's review of shop drawings is intended solely to verify compliance with the general concept of the data indicated on them.

.1 This review does not imply that the Department approves the detailed preliminary design presented in the shop drawings, which is the responsibility of the Contractor submitting them, nor does it relieve the Contractor of the obligation to submit complete and accurate shop drawings, and to comply with all the requirements of the work and the Contract Documents.

.2 Without limiting the generality of the foregoing, it is important to note that the Contractor is responsible for the accuracy of the dimensions confirmed on site, for providing information on manufacturing methods or construction and installation techniques, and for coordinating the work performed by all trades.

1.4 PHOTOGRAPHIC DOCUMENTS

.1 Submit, every month with the progress report and according to the instructions of the Departmental Representative, one (1) copy of the file of digital photographs in color, of standard resolution, in jpg format, presented in electronic format.

.2 Project identification: designation and number of the project and date of taking the photo.

.3 Number of viewpoints: two (2).

.1 Views and their location will be determined by the Ministry Representative.

.4 Frequency of submission of photos: weekly according to the instructions of the Departmental Representative.

.1 Once the excavation and installation of the utility pipes has been completed, but before the works are concealed and according to the instructions of the Departmental Representative.

1.5 CERTIFICATES AND TRANSCRIPTS

.1 Submit the documents required by the relevant occupational health and safety commission immediately after the contract is awarded.

1.6 NON-EXHAUSTIVE LIST OF DOCUMENTS TO BE SUBMITTED

.1 The Entrepreneur must submit the documents listed below. The latter is non-exhaustive and is subject to change without notice.

- .1 Insurance documents;
- .2 Sureties;
- .3 List of labour and equipment rates
- .4 List of suppliers and subcontractors;
- .5 Timeline;
- .6 Notice of commencement at the CNESST;
- .7 Agreement with bulk carriers;
- .8 Location of existing utility services;
- .9 Health and Safety Program;
- .10 Environmental Protection Action Plan;
- .11 Signage and traffic management plans;
- .12 Provisional works plans;
- .13 Disposal site(s) of surplus excavation and signed agreement of the site owner;
- .14 List and contact details of intermediate survey stations established by the Contractor;
- .15 Workshop drawings and data sheets:
  - .1 Drinking water pipe, fittings and plug;
  - .2 Sanitary pipes, fittings and plugs;
  - .3 Retaining joints;
  - .4 Connection sleeve;
  - .5 Membrane;
  - .6 Complete wastewater treatment system:
    - .1 Concrete tanks;
    - .2 Components of theseptic fosse;
    - .3 Components of the biologicalresponse;
    - .4 UV disinfection system;
    - .5 Ventilation system;
    - .6 Technical boxes;
    - .7 Related equipment;
  - .7 Electrical components;
  - .8 Complete operation and maintenance manuals for all equipment;
  - .9 Wastewater treatment system performance test report;
  - .10 Frame and lid;
  - .11 Sediment barrier;

.16 Certificates of conformity of granular materials and stonework.

.17 Formulas of mixtures of cement concrete, bituminous asphalt, topsoil, and sod.

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

GENERAL NOTE: In this section, the term "site" extends to all facilities located on the site where the project itself is taking place (buildings, access, infrastructure, parking lots, docks, etc.).

1.1 RELATED REQUIREMENTS

.1 All sections of the specifications.

1.2 REFERENCE STANDARDS

.1 Province of Quebec

.1 Act respecting occupational health and safety, R.S.Q., c. S-2.1

.2 Safety Code for Construction Work, R.S.Q., c. S-2.1, r.4

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit the required documents and samples in accordance with section 01 33 00 - Documents and samples to be submitted.

.2 Send the Department Representative the prevention program specific to the construction site, as described in the article "GENERAL REQUIREMENTS", at least 10 days before the start of the work.

.3 If it is expected that there will be 25 or more workers on the site at any time during the work, the site-specific prevention program must also be sent to the CNESST.

.4 The Department Representative will review the prevention program prepared by the Contractor for the project and provide his observations within 10 working days of receipt of this document. If necessary, the Contractor will review its prevention program and resubmit it to the Department Representative no later than 5 days after receipt of the Department Representative's comments. The Department Representative reserves the right not to authorize the start of work on the site until the content of the prevention program is satisfactory. The Contractor must then update its prevention program and submit it to the Department Representative if the scope of work changes, if the Contractor's working methods differ from its initial forecasts or for any other applicable new conditions.

.5 The Department Representative's review of the prevention program prepared by the Contractor for the project should not be construed as an endorsement of this program and does not limit the Contractor's overall liability for health and safety during construction.

.6 Submit to the Department Representative at least 1 time per week the reports of the health and safety inspections carried out on the site by the Authorized Representative of the Contractor.

.7 Submit to the Departmental Representative, within 24 hours, a copy of any inspection report, notice of correction or recommendations issued by federal, provincial, and territorial health and safety inspectors.

.8 Submit to the Department Representative, within 24 hours, an investigation report for any accident resulting in injury and for any incident that highlights a potential risk.

.9 The investigation report must contain at least the following elements:

.1 date, time and place of the accident;
.2 name of the subcontractor involved in the accident;
.3 number of people involved and condition of the injured;
.4 identification of witnesses;
.5 detailed description of the tasks performed at the time of the accident;
.6 equipment used to perform the tasks performed at the time of the accident;
.7 corrective action taken immediately after the accident;
.8 causes of the accident;
.9 preventive measures put in place to avoid a similar accident.

.10 Submit WHMIS Safety Data Sheets to the Departmental Representative in accordance with section 01 33 00. The Contractor must also keep a copy of these records on site.

.11 Medical surveillance: Where required by a law, regulation or safety program, submit, before commencing the work, the certification of the medical surveillance of the personnel working on the site. Send the Department Representative an additional certification for any new employee working on the site.

.12 Provide the Department Representative with an emergency response plan at the same time as the prevention program. This emergency response plan must contain the elements listed in the "GENERAL REQUIREMENTS" section of this section.

.13 Send the Department Representative a copy of the training certificates of the workers on the site, for the following training courses (where applicable):

.1 first aid in the workplace and cardiopulmonary resuscitation;
.2 work likely to emit asbestos dust (mandatory for all work in the presence of asbestos);
.3 confined space work (mandatory for all confined space work);
.4 lockout (mandatory for any work requiring lockout);
.5 safe operation of forklifts (mandatory for all forklift use);
.6 safe operation of lifting work platforms (mandatory for any use of lifting platforms);
.7 any other training required by regulation or by the prevention program.

In addition, the certificates *of the General Health and Safety Course for construction* must be available on request on the site.

.14 Engineer's plans and attestations of conformity: the Contractor must send to the Representative of the Ministère and to the *Commission des normes, de l'équité, de la santé et de la sécurité du travail* (CNESST) a copy signed and sealed by an engineer of all the plans that are required under the *Safety Code for construction work* (S-2.1, r.4), another Act, regulation or clause of the quotation or contract. He must also send a certificate of conformity signed by an engineer once the facility for which these plans were designed has been completed and before a person uses the facility. A copy of these documents always be always available at the site.

1.4 FILING OF NOTICE

.1 Before the start of the work, send the notice of site opening to the CNESST. Send the Representative of the Minister a copy of the notice of initiation and the acknowledgement of receipt sent by the CNESST.

At the end of all the work, the notice of closure must be sent to the CNESST, with a copy to the Department Representative.

.2 The Contractor must always assume the role of prime contractor within the boundaries of the project and anywhere else where it is to perform work under this project. The Contractor must recognize the responsibility of prime contractor and thus identify himself in the notice of site opening that he sends to the CNESST.

.3 The Contractor must agree to divide and identify the site properly, to always define time and space during the duration of the project.

1.5 SAFETY ASSESSMENT

.1 Assess the risks/hazards for the safety present on this site regarding the execution of the work.

1.6 MEETINGS

.1 Organize a health and safety meeting with the Department Representative before the start of the work and ensure its direction.

.2 A decision-making representative of the contractor must attend all meetings where health and safety are discussed on the site.

.3 If it is expected that there will be 25 or more workers on the site at any time during the work, the contractor must set up a site committee and hold the meetings as required by the *Safety Code for Construction Work* (S-2.1, r. 4). A copy of the minutes of the site committee meetings must be sent to the Departmental Representative no later than 5 days from the date of the committee meeting.

1.7 REGULATORY REQUIREMENTS

.1 Perform the work in accordance with section 01 41 00 - Regulatory Requirements.

.2 Comply with all laws, regulations and standards that are applicable to the execution of the work.

.3 Observe prescribed standards and regulations to ensure a normal course of work on land contaminated with hazardous or toxic materials.

.4 Always use the most recent version of the standards cited in the *Safety Code for Construction Work* (S-2.1, r.4), notwithstanding the date indicated in this *Code.*

1.8 PROJECT/SITE CONDITIONS

.1 Comply with the *Act respecting occupational health and safety* (R.S.Q., c. S-2.1) and the *Safety Code for construction work* (S-2.1, r. 4.) in addition to complying with all the requirements of this specification.

1.9 RESPONSIBILITIES

.1 The Contractor must accept and assume all the tasks and obligations normally assigned to the prime contractor under the Act respecting occupational health and safety (R.S.Q., chapter S-2.1) and the *Safety Code for Construction Work (*S-2.1, r.4).

.2 The Contractor must assume responsibility for the health and safety of the persons present on the site, as well as the protection of the property located on the site; also assume, in the areas adjacent to the construction site, the protection of people and the environment to the extent that they are affected by the work.

.3 Regardless of the size and location of the project, the Contractor must clearly delineate the boundaries of the site by physical means; it must also comply with the specific requirements of the regulations on this subject. The means chosen to delimit the site must be submitted to the Department Representative.

.4 Comply with, and ensure compliance by employees, with the safety requirements set out in applicable local, territorial, provincial, and federal contract documents, ordinances, laws and regulations, as well as in the prevention program prepared for the project.

1.10 WORK PERFORMED BY EXTERNAL CONTRACTORS

.1 Not applicable

1.11 GENERAL REQUIREMENTS

.1 Before undertaking the work, draw up a site-specific prevention program based on the prior risk/hazard assessment in accordance with the article "RISK/HAZARD ASSESSMENT" and the article "RISKS INHERENT IN THE SITE OF THE WORK" of this section. Implement this program and ensure compliance in all respects until the demobilization of all the personnel of the site. The prevention program must consider the particularities of the project and must cover all the work carried out on the site.

The prevention program must include at least the following elements:

.1 the company's health and safety policy;
.2 description of the stages of the work;
.3 total cost of work, timeline and expected workforce curve;
.4 organizational chart of health and safety responsibilities;
.5 physical and material organization of the site;
.6 identification of risks for each stage of the work, corresponding preventive measures and implementation modalities;
.7 identification of preventive measures in relation to the specific risks inherent in the workplace indicated in the article INHERENT RISKS AT THE SITE OF THE WORKS;

.8 identification of preventive measures for the health and safety of employees and/or the public at the work site as indicated in the article SPECIFIC REQUIREMENTS FOR THE HEALTH AND SAFETY OF OCCUPANTS AND THE PUBLIC;

.9 training required;

.10 procedure in case of accident/injury;

.11 written commitment of all stakeholders to adhere to this prevention program;

.12 site inspection grid based on preventive measures;

.13 emergency response plan, which must contain at least the following elements:

.1 site evacuation procedure;

.2 identification of resources (police, firefighters, ambulances, etc.);

.3 identification of the persons responsible on the construction site;

.4 identification of first responders;

.5 communication flowchart (including the site manager and the Department Representative);

.6 training required for those responsible for its application;

.7 any other information necessary, considering the characteristics of the construction site.

The Department Representative will provide the Contractor with the procedure for the evacuation of the site, if applicable; the latter will then have to link the procedure of the site with that of the site and transmit it to the Department Representative.

.2 The Departmental Representative may provide written submissions if the prevention program contains anomalies or raises concerns and may require the submission of a revised program that will correct or address these deficiencies.

.3 In addition to the prevention program, during the work the Contractor must develop and transmit to the Department Representative a specific written procedure for any work presenting a high risk of accidents (example: demolition procedure, special installation procedure, lifting plan, procedure for entering confined spaces, procedures for power cuts, etc.) or at the request of the Department Representative.

.4 The Contractor must plan and organize the work in such a way as to promote the elimination of hazards at the source or collective protection and thus minimize the use of personal protective equipment.

.5 Equipment, tools or means of protection that cannot be installed or used without compromising the health and safety of workers or the public is deemed to be inadequate for the work to be performed.

.6 All mechanical equipment (examples: lifting devices for people or materials, mechanical shovels, concrete pumps, concrete saws, but not limited to) must be inspected prior to delivery to the site. The Contractor must obtain a certificate of inspection signed by a mechanic and dated less than one week before the arrival of each piece of equipment on the site and keep it on the site; he must submit it to the Department Representative on request.

.7 Ensure that all inspections (daily, periodic, annual, etc.) of lifting equipment for people or materials required by current standards are carried out and be able to provide a copy of inspection certificates upon request of the Department Representative.

.8 The Department Representative may at any time, if he suspects a defect or a risk of accident, order the immediate shutdown of any equipment and require an inspection by a specialist of his choice.

.9 The Department Representative must be consulted for the location of gas cylinders and tanks on the site.

1.12 RISKS INHERENT IN THE SITE OF THE WORK

.1 In addition to the risks related to the tasks to be performed, the personnel responsible for the work on the site will be exposed to the following risks, inherent in the place where the work will be carried out.

At the place where the work will take place, there is the presence of:

.1 confined spaces;
.2 overhead power lines;
.3 underground services (electricity, gas, steam, aqueduct, etc.);
.4 trees and landscaping to be conserved and protected;
.5 potentially unstable soils;
.6 nearby body of water;
.7 wastewater;
.8 fauna and flora.

The Contractor must conduct a site risk assessment to validate these information and see if other risks are present on the site. It must include in its prevention program all risks that have been identified

1.13 SPECIFIC REQUIREMENTS FOR THE HEALTH AND SAFETY OF OCCUPANTS AND THE PUBLIC

.1 The site where the work will take place is occupied by employees and/or the public for the duration of the work, although these persons will not have access to the Contractor's site: The Contractor must consider the following specific requirements for the protection of employees and/or the public:

.1 Close the access fences according to the client's recommendations according to the period of the work;
.2 Work near a railway;
.3 Mark the surroundings with at least a yellow "Danger" ribbon during work in pumping stations.

These requirements must be included in the Contractor's prevention program as well as all other measures planned by the Contractor to protect the health and safety of employees and/or the public present on the site.

1.14 UNFORESEEN

.1 When unforeseen a source of danger not specified in the contract documents and not identifiable during the preliminary inspection of the site appears by the fact or during the execution of the work, the Contractor must immediately stop the work, notify the person responsible for health and safety on the site, put in place temporary protective measures for workers and the public and notify the Department Representative verbally and in writing. The Contractor must then make the necessary changes to the prevention program and put in place the necessary safety measures so that the work can resume.

1.15 HEALTH AND SAFETY CO-ORDINATOR

.1 If the project meets the criteria of section 2.5.3 *of the Safety Code for Construction Work* (S-2.1, r.4), the Contractor must hire a competent and authorized person as a safety officer, and assign him full-time from the beginning of the work. The tasks of this person must be dedicated exclusively to the management of health and safety on the construction site. The safety officer must meet the following criteria:

- .1 hold a security guard certificate issued by the CNESST;
- .2 have at least two (2) years of practical experience on a project site where associated activities similar to those of the project are carried out;
- .3 have a working knowledge of workplace health and safety regulations;
- .4 assume responsibility for the Contractor's occupational health and safety training sessions and verify that only persons who have successfully completed the required training have access to the site to carry out the work;
- .5 assume responsibility for the implementation, compliance in the menu detail and follow-up of the health and safety plan prepared for the site by the Contractor;
- .6 be present at all times on the site during the execution of the work;
- .7 inspect the work and ensure compliance with all regulatory requirements and those identified in the contract documents or prevention program;
- .8 keep a daily record of his interventions and send a copy to the Department Representative at least once a week.

The safety officer's certificate must be sent to the Departmental Representative before the start of the work.

.2 When the hiring of a safety officer is not required or the officer is hired by the Departmental Representative, the Contractor must appoint a competent person as supervisor and responsible for health and safety, regardless of the size of the site or the number of workers present. This person must be always present on the site and must be able to take all necessary measures to ensure the health and safety of people and property at work and in the immediate environment of the site that could be affected by the progress of the work. The Contractor must send the name of this person to the Department Representative before the start of the work.

1.16 POSTING DOCUMENTS

.1 Ensure that relevant documents, sections, orders, and notices are posted prominently on the site in accordance with provincial laws and regulations and in consultation with the Department Representative.

.2 At a minimum, the following information and documents must be posted in a place that is easily accessible to workers:

.1 notice of opening of the project;
.2 identification of the prime contractor;
.3 company OSH policy;
.4 site-specific prevention program;
.5 contingency plan;
.6 minutes of site committee meetings;
.7 names of representatives on the site committee;
.8 names of first responders;
.9 intervention and correction reports issued by the CNESST.

1.17 CORRECTION OF NON-COMPLIANCE

.1 Inspect workplaces, complete the site inspection grid, and submit it to the Department Representative in accordance with the article "DOCUMENTS/SAMPLES TO BE SUBMITTED FOR APPROVAL/INFORMATION" of this section.

.2 Take immediate measures to correct situations deemed non-compliant found during the inspections mentioned in the preceding paragraph or found by the competent authority or by the Department Representative or his representative.

.3 Provide the Departmental Representative with a written report of the measures taken to correct the situation in the event of non-compliance with health and safety.

.4 The Contractor shall grant the safety officer or, where there is no safety officer, the person authorized to deal with health and safety, all the authority necessary to order the stop and resumption of work when it considers it necessary or desirable for health and safety reasons. It will have to ensure that the health and safety of the public and site personnel and the protection of the environment always take precedence over issues related to the cost and schedule of work.

.5 The Department Representative or his agent may order the stoppage of work if the Contractor does not make the necessary corrections regarding the conditions deemed non-compliant in terms of health and safety. Without limiting the scope of the preceding sections, he may also at any time order the stoppage of work if, according to his perception, there is a danger or a risk to the health or safety of site personnel or the public or to the environment.

1.18 VIOLENCE PREVENTION

.1 Public Works and Government Services Canada's health and safety management on construction sites includes the implementation of measures to protect the psychological health of all persons accessing the site where the work is taking place. Thus, physical violence, verbal abuse, bullying and harassment in all possible forms will not be tolerated on the site. Any person who demonstrates such gestures or behaviors will receive a warning and/or may be permanently expelled from the site by the Department Representative.

1.19 DYNAMITING

.1 Not used.

1.20 CARTRIDGE DEVICES

.1 Use cartridge devices only with the written permission of the Department Representative.

.2 Every person who uses a sealing gun must hold a training certificate and meet all the requirements of section 7 *of the Safety Code for Construction Work* (S-2.1, r. 4).

.3 Any other cartridge device shall be used as directed by the manufacturer and in accordance with the applicable standards and regulations.

1.21 USE OF PUBLIC ROADS

.1 When it is necessary to encroach on public roads for operational reasons or to ensure the safety of workers, occupants or the public (e.g. use of scaffolding, cranes, digging work, etc.), the Contractor must obtain at its own expense all authorizations and permits required by the competent authority.

.2 The Contractor must install at its own expense all signage, barricades and other devices required by regulation to ensure the safety of the public and its own facilities.

1.22 TAGOUT / LOCKOUT

.1 For any work on equipment powered by electricity or any other source of energy, the Contractor must transmit a general lockout procedure to the Department Representative and implement it.

.2 Supervisory staff and all workers involved in work requiring lockout must have completed lockout training from a recognized organization; the Contractor must send the training certificates to the Department Representative.

.3 Before commencing the lockout of equipment in an occupied site, the Contractor must coordinate its work with the site representative if the shutdown of energy sources could affect the operations of the site or the occupants.

.4 The Contractor must identify a qualified person as being responsible for the lockout and must ensure that this person writes a lockout sheet for each piece of equipment that is to be padlocked. The lockout form must be sent to the Department Representative at least 48 hours before the start of the work; the latter will have it checked by a representative of the site if the work takes place in an existing building. The lockout form must include at least the following information:

.1 description of the work to be performed;
.2 identification, description and location of the circuit and/or equipment to be padlocked;
.3 identification of the energy sources that power the equipment;
.4 identification of each cut-off point;
.5 sequence of lockout and release of residual energy as well as sequence of no lockout;
.6 list of necessary lockout equipment;
.7 zero energy verification method;

.8 name and signature of the person who wrote the form;

At the request of the Department Representative, the Entrepreneur must record all this information on the form of the representative of the site.

.5 At the time of lockout, the person in charge must date the card and ensure that each worker involved in the work on the padlocked circuit/equipment affixes his name to the card and signs it.

1.23 ELECTRICAL WORK

.1 The Contractor must ensure that all electrical work is performed by qualified employees in accordance with provincial qualification and vocational training regulations.

.2 The Contractor must comply with the requirements of CSA Z462 *Workplace Electrical Safety*.

.3 Any work on electrical equipment must be turned off unless it is not possible to completely disconnect this switchgear.

.4 The Contractor must comply with all the requirements of the "Lockout" paragraph of this section.

.5 The Contractor must notify the Department Representative in writing for any work that cannot be done off and obtain his authorization. He must demonstrate to the Department Representative that it is impossible to do the work off and provide all the information necessary to complete and obtain a live work permit (work method, assessment of the level of electric arc, protection perimeter, protective equipment, etc.) before the start of the work, except for the exceptional cases provided for in the CSA Z462 Electrical Safety standard.

.6 The live work permit must contain at least the following:

.1 description of the circuit and equipment and location;
.2 justification of the need to do the work under stress;
.3 description of the safe work practices to be adopted;
.4 conclusions of the electric shock hazard analysis;
.5 delimitation of the perimeter of protection against electric shock;
.6 conclusions of the arc flash hazard analysis;
.7 description of the perimeter of protection against electric flashes;
.8 description of the personal protective equipment required;
.9 description of ways to restrict access to unqualified persons;
.10 evidence that an information session has been held;
.11 signature of approval of work under tension (by a person in authority or by the owner).

.7 If for the operational needs of the site occupants, the site representative requires the Contractor to carry out work under tension, the latter must obtain all the necessary information to complete a live work permit (working method, assessment of the level of electric arc, protection perimeter, protective equipment, etc.) and have it signed by the site representative designated by the Department Representative before the start of the work.

1.24 EXPOSURE TO ASBESTOS

.1 It is not intended that the work covered by this specification involves the handling of asbestos-containing materials; however, if the Contractor or the Department Representative or its agent discover materials that are likely to contain asbestos, the Contractor must immediately interrupt the work and notify the Department Representative. If it is subsequently demonstrated that these materials contain asbestos, the Contractor must comply with the following requirements.

.2 Before the start of any work likely to emit asbestos dust, the Contractor must:

.1 Provide a written work procedure identifying the level of risk of the work (low, moderate, high), as defined in section 3.23 *of the Safety Code for Construction Work* S-2.1, r-4, and that considers all the requirements of that same section.

.3 Transmit certificates demonstrating that all workers involved in the work have received training on the risks related to asbestos and on the procedure required in the previous paragraph.

.4 Demonstrate that he has on hand all the materials and equipment necessary to comply with the procedure and the safe execution of the work.

1.25 FUNGAL CONTAMINATION

.1 It is not intended that the work covered by this estimate involves the handling of materials contaminated by mold; however, if the Contractor or the Department Representative or his agent discover materials that are likely to be contaminated by mould, the Contractor must immediately interrupt the work and notify the Department Representative. If it is subsequently demonstrated that these materials contain mold, the Contractor must comply with the following requirements.

.2 Before the commencement of any work for which workers are likely to encounter materials contaminated with mold, the Contractor must:

.1 Provide a written work procedure that meets the requirements of the Construction Safety Code, S-2.1, r.4 as well as the requirements set out in the "Mould Guidelines for the Canadian Construction Industry" document published by the Canadian Construction Association (https://www.cca-acc.com/wp-content/uploads/2016/07/cca82promofr.pdf).

.3 Demonstrate that he has on hand all the materials and equipment necessary to comply with the procedure and the safe execution of the work.

1.26 EXPOSURE TO SILICA

.1 For any interior or exterior work generating silica dust, the Contractor must meet the requirements below, in addition to complying with those of the Safety Code for Construction Work S-2.1, r.4.

.2 Work in a humid environment or use tools with water supply to reduce dust, otherwise capture dust at the source and retain it in a high-efficiency filter so as not to spread it in the environment.

.3 Clean surfaces and tools with water, never with compressed air.

.4 Sand and strip surfaces using an abrasive containing less than 1% silica (also called amorphous silica).

.5 Wear respiratory and eye protection equipment during all operations likely to produce silica dust in accordance with the requirements *of the Safety Code for Construction Work, S-2.1, r.4.*

.6 Wear protective coveralls to prevent contamination off-site.

.7 Do not eat, drink, or smoke in a dusty area.

.8 Wash hands and face before drinking, eating, or smoking

1.27 ABRASIVE JET STRIPPING

.1 Prior to the commencement of any abrasive jet stripping work, the Contractor must:

.1 Provide a written work procedure that meets the requirements of section 3.20 *of the Safety Code for Construction Work, S-2.1, r.4* .

.2 Demonstrate that he has on hand all the materials and equipment necessary to comply with the procedure and the safe execution of the work.

.3 All sandblasting and stripping work must be carried out with an abrasive containing less than 1% silica.

1.28 LEAD-BASED PAINT REMOVAL

.1 Prior to the commencement of any work for which workers are likely to handle materials containing lead paint or other lead-containing substances, the Contractor must:

.1 Provide a written procedure that meets the requirements of the Safety Code for Construction Work, S-2.1, r.4, the requirements set out in the document "Guidelines for exposure to lead on construction sites" published by the Ontario Ministry of Labour (https://www.labour.gov.on.ca/french/hs/pubs/lead/) as well as the requirements described in the document "Exposure to lead" published by the CNESST (https://www.cnesst.gouv.qc.ca/Publications/200/Documents/DC200-16161-1web.pdf). In the event of discrepancies between the Quebec regulations and the Ontario document, the most stringent requirement applies.

.2 Demonstrate that he has on hand all the materials and equipment necessary to comply with the procedure and the safe execution of the work.

1.29 EXPOSURE TO ANIMAL DROPPINGS

.1 Prior to the commencement of any work for which workers are likely to come into contact with materials contaminated with animal droppings, the Contractor must:

.2 Provide a written procedure that meets the requirements of the Safety Code for Construction Work, S-2.1, r.4 as well as the requirements indicated in the following documents:

.1 "Pigeon droppings in your workplace: beware" published by the CNESST (https://arpac.org/wp-content/uploads/2018/04/fientes-pigeons.pdf)

.2 "These poisonous pigeons" published by APSAM https://www.apsam.com/sites/default/files/docs/publications/revue/vol13-no2p2.pdf

.3 "Health risks related to pigeon droppings in the workplace in Quebec: Prevention measures" published by the Régie Régionale de la Santé et des Services Sociaux de Montréal-Centre

http://www.santecom.qc.ca/bibliothequevirtuelle/santecom/35567000038163.pdf

.3 Demonstrate that he has on hand all the materials and equipment necessary to comply with the procedure and the safe execution of the work.

1.30 RESPIRATORY PROTECTION

.1 The Contractor shall ensure that all workers who are required to wear respirators as part of their duties have undergone training to this effect, as well as fit testing of their respirator, in accordance with CSA Z94.4 *Selection, Maintenance and Use of Respirators.* Certificates of fit testing must be provided to the Department Representative upon request.

1.31 FALL RISK PREVENTION

.1 Plan and organize the work in such a way as to promote the elimination of fall hazards at the source or collective protection and thus minimize the use of personal protective equipment. When personal fall protection is required, workers will be required to use a safety harness in accordance with CAN - CSA- Z-259.10 - M90. The seat belt should not be used as fall protection.

.2 All persons using a lifting platform (scissors, telescopic mast, articulated mast, rotating mast, etc.) must have received training for this purpose.

.3 The wearing of the safety harness is mandatory in all lifting platforms with telescopic, articulated, or rotary mast.

.4 Delineate a danger zone around each lift platform.

.5 Any opening in a floor or roof must be surrounded by a guardrail or covered with a cover attached to the floor and resistant to the loads to which it may be subjected, regardless of the dimensions of this opening and the height of fall it represents.

.6 Any person who works within two metres of a place with a fall hazard of three metres or more must use a safety harness in accordance with the requirements of the regulations unless there is a guardrail or other element offering equivalent safety.

.7 Despite the requirements of the regulations, the Department Representative may require the installation of guardrails or the use of safety harnesses for certain specific situations presenting a risk of falls of less than 3 meters.

1.32 SCAFFOLDING

.1 In addition to the requirements *of the Safety Code for Construction Work*, the Contractor who uses scaffolding must meet the following requirements:

.1 Sitting

.1 Scaffolding must be installed on solid foundations so that it cannot slip or tilt.

.2 The Contractor who wishes to install scaffolding on a roof, a roof advance, a canopy, or an attic must submit to the Department Representative his load calculations as well as the plans signed and sealed by an engineer and obtain his authorization before starting the installation.

.2 Assembly, bracing and mooring

.1 All scaffolding must be assembled, braced, and moored in accordance with the manufacturer's instructions and the provisions *of the Construction Safety Code*.

.2 For any situation where it is necessary to remove certain elements of the scaffolding (e.g., braces), the Contractor must submit to the Department Representative, before assembling the scaffolding, an assembly procedure signed and sealed by an engineer certifying that the scaffolding thus assembled will allow the work to be carried out safely, considering the loads that will be applied to it.

.3 For any scaffolding structure whose span between two supports is greater than three meters, the Contractor must provide the Representative of the Department, before the assembly of the scaffolding, with an assembly plan signed and sealed by an engineer.

.3 Fall protection during assembly

.1 At all times, during assembly or dismantling, all workers must be protected against falls if they are exposed to a risk of falling more than three meters.

.4 Floors

.1 Scaffolding floors must be designed and installed in accordance with the provisions *of the Construction Safety Code.*

.2 If planks are used, they must be approved and stamped, in accordance with the provisions of section 3.9.8 *of the Safety Code for Construction Work.*

.3 Scaffolding four or more sections (or six meters) in height must have a solid floor covering the entire surface of the boulins every three meters in height or fraction of three meters and the elements of these floors must not at any time be moved to create intermediate landings.

.5 Guardrail

.1 A guardrail must be installed at all levels of work.

.2 Bracing braces should not be considered as guardrails.

.3 If the floors are not full, the guardrails should be installed just above the edge of the floor so that there is no empty horizontal space between the floor and the railing.

.4 In the case of scaffolding of four sections (or six metres) or more height where solid floors are required, guardrails must be installed at each of these landings at the beginning of the work and remain in place until the end of the work.

.6 Means of access

.1 The Contractor must ensure that the means of access to the scaffolding do not compromise the safety of the workers.

.2 Where the floors of the scaffolding are made of planks, ladders must be installed so that the planks that protrude do not impede the ascent or descent.

.3 Notwithstanding the provisions *of the Construction Safety Code*, stairs must be installed on all scaffolding with six or more rows of pillars and six or more sections (or nine meters) in height.

.7 Protection of the public and occupants

.1 Where scaffolding is installed in an area accessible to the public, the Contractor must take steps to prevent the public from accessing the scaffolding and, if applicable, the work or storage area located near such scaffolding.

.2 The Contractor must install covered passageways, nets, or other similar devices to protect workers, the public and occupants from falling objects. The chosen means of protection must be approved by the Department Representative.

.8 Engineering plans

.1 In addition to those required by the Safety Code for Construction Work, the Department Representative reserves the right to require engineering plans for other types or configurations of scaffolding.

.2 A plan signed and sealed by an engineer is required for any scaffolding on which will be fixed canvases, tarpaulins or other devices giving rise to the wind.

.3 A certificate of compliance signed by an engineer is required for all cases where an engineer's plan is required before a person uses the facility that is the subject of the plan. A copy of these documents must always be available at the site.

1.33 CONFINED SPACES

.1 In addition to complying with provincial regulations that apply to confined spaces, the Contractor must comply with the requirements set out in the following paragraphs.

.2 The Department Representative reserves the right, depending on the nature of the risks of the confined spaces, the work to be carried out and/or the level of confined space skills demonstrated by the Contractor, to require the Contractor to use the services of a firm specializing in health and safety or confined spaces to analyze the risks inherent in confined spaces, to complete the entry permit, to supervise the work or for any other task related to confined space work.

Information on confined spaces on the site

.1 The following list presents, but is not limited to, the confined spaces in which the Contractor is likely to have access during this project:

.1 Interpretation Centre Pumping Station

.2 Workshop pumping station

.3 Spillway at the exit of the pond

.4 Wastewater treatment system tanks

.2 The Contractor must consider each of these confined spaces and must also add to this list any new confined spaces that the Contractor is likely to construct/install during this project.

Person responsible for the health and safety of confined space work

.1 The Contractor must designate a person responsible for the health and safety of confined space work. The person must be a qualified person, as defined in section 297 of *the Regulation respecting occupational health and safety* (S-2.1, r.13). It must be present at all times during confined space work and must ensure that all regulatory requirements and the requirements set out in this section are met. It must complete and issue the permit to enter a confined space.

Formation

.1 All persons with access to a confined space, as well as the person in charge and the confined space supervisor, must have completed training on entering confined spaces.

.2 All persons who are required to use self-contained breathing apparatus for access to confined spaces must have been trained in the use of such devices.

.3 All persons identified as confined space rescuers must have completed confined space rescue training.

.4 Each of the training required in the preceding paragraphs must be given by a firm specializing in health and safety or confined spaces.

.5 The training certificates of the persons indicated above must be sent to the Department Representative before the start of the confined space work.

Confined Space Risk Assessment

.1 For each of the confined spaces listed at the beginning of this section, the Contractor must obtain the necessary information from the site representative and carry out an assessment of the risks inherent in each of these confined spaces and which are related to:

- .1 the internal atmosphere prevailing therein, namely the concentration of oxygen, flammable gases and vapors, combustible dusts presenting a danger of fire or explosion, and categories of contaminants generally likely to be present in or around that confined space;
- .2 insufficient natural or mechanical ventilation;
- .3 materials present therein that may cause the worker to get bogged down, buried or drown, such as sand, grain or liquid;
- .4 its interior configuration;
- .5 pipes and conduits that enter the confined space;
- .6 energy, such as electricity, moving mechanical parts, thermal stress, noise and hydraulic energy;
- .7 ignition sources such as open flames, lighting, welding and cutting, static electricity or sparks;
- .8 any other special circumstance, such as the presence of vermin, rodents, or insects.

.2 These risk assessments must be made by the person responsible for the health and safety of confined space work. They must be sent to the Department Representative for analysis at least 10 days before the date scheduled for the work in confined spaces and must also contain the following information:

- .1 location of the confined space;
- .2 description of the confined space;
- .3 confined space dimensions;
- .4 number, location and dimensions of openings;
- .5 confined space content (equipment, substances, etc.)
- .6 date of assessment;

.7 name and signature of the person who carried out the assessment and name of his or her employer.

.3 The Contractor must perform the same exercise for each of the confined spaces it will build/install during this project.

Confined Space Entry Permit

.1 The Contractor must send to the Department Representative for analysis at least 5 days before the date scheduled for the work in confined spaces a copy of each entry permit specific to the confined spaces in which he must access. Entry permits must be completed by the person responsible for the health and safety of confined space work, and must include at least the following information:

.1 a description of the work that will be performed and the method of work, including the equipment and tools required to do the work;

.2 description of the risks and the corresponding control measures, based on the results of the pre-project risk assessment of the confined space and the risks inherent in the work to be performed;

.3 safety equipment that will be used to control the risks of confined spaces (e.g. fan, gas detector, source suction, personal protective equipment, etc.);

.4 rescue procedure containing at least the following:

.1 means of communication between the confined space supervisor and workers inside the confined space;

.2 life-saving equipment specific to each confined space;

.3 confirmation that the municipality's emergency response department has been notified of the holding of confined space work specifically on this project and that it can intervene to make a rescue inside a confined space; otherwise, the contractor must identify the workers on the site who will act as rescuers in the event that such rescuers need to access the interior of the confined space (mandatory rescue training);

.4 telephone location and telephone number of the municipality's emergency response service (if applicable);

.5 date of entry permit;

.6 name of the person issuing the license and name of his or her employer;

.7 name of the supervisor and name of his employer;

.8 the names of the workers who must enter the confined space and the name of each person's employer.

.2 In cases where the site representative requires the use of the site-specific confined space entry permit, the Contractor must comply with the requirements of this permit.

Medical surveillance

.1 The Contractor must send the Department Representative a medical certificate less than two years old for all persons having to use a supplied air respirator. This certificate must confirm the ability of each person to use this type of device.

.2 It is recommended that people who must work in sewage collection systems or other similar systems be vaccinated against diphtheria, tetanus, and hepatitis "B".

Requirements during confined space work

.1 Before each entry into a confined space, the person in charge must take readings of the concentration of oxygen, flammable gases and all toxic gases that may be present and record the results of these readings on the previously required entry permit.

.2 No worker may access the confined space if the following requirements are not met:

.1 the oxygen concentration must be greater than or equal to 19.5% and less than or equal to 23%;

.2 the concentration of flammable gases or vapors must be less than or equal to 10% of the lower explosion limit;

.3 the concentration of the other gases must not exceed the standards set out in Schedule I to *the Regulation respecting occupational health and safety* (S-2.1, r.13).

.3 If the measured oxygen and gas concentrations meet the regulatory values, the responsible person must ensure that all the preventive measures indicated on the permit are in place and must complete the entry permit (date, time, signatures, etc.). before issuing the permit and allowing access to the confined space.

.4 An entry permit must cover only one shift; the Contractor must issue a new permit for each additional shift.

.5 During work inside the confined space, the gas concentration must be measured continuously, and the detector must be installed at the level of the respiratory zone of the workers. If conditions inside the confined space are such that workers may not hear/see the detector alarm, the contractor must find a way for the confined space supervisor to monitor concentration measurements while maintaining measurements in the workers' respiratory zone.

.6 If the work is organized in such a way that workers can be separated from each other in a large, enclosed space, the Contractor must provide additional gas detectors.

.7 The Contractor must provide the gas detectors and keep them in good condition. It must be able to demonstrate that the gas detectors used have been calibrated and adjusted by the responsible person or by a qualified person and according to the manufacturer's recommendations. At any time, the Departmental Representative may have the accuracy of the Contractor's devices verified. In the event of a failure of a detection device, the work must be immediately suspended, and all workers must leave the confined space.

.8 The gas detector manufacturer's manual must be available on site.

.9 The Contractor shall provide a ventilation system of sufficient power to keep contaminant concentrations below regulatory concentration limits.

.10 If the work generating contaminants in the air is carried out (welding, use of products, etc.), the Contractor must, if necessary, install a contaminant extraction system so as to be able to comply at all times with the regulatory values of air quality.

.11 If the alarm of a gas detector goes off, all workers must leave the confined space. The concentration records must then be recorded on the entry permit. The Contractor must then identify the source of contamination, neutralize it, ventilate the confined space to remove contaminant residues, and allow access to the confined space only when oxygen and gas concentrations have returned to normal.

.12 No compressed gas cylinders or welding machines must be brought inside the confined spaces: this equipment must remain outside and must not block access or exit; all bottles must be secured properly.

.13 Electrical tools and appliances used for work in confined spaces must be grounded and, if necessary, explosion-proof. All equipment must be connected to a circuit switch in the event of a ground leak or to a step-down transformer. The Contractor must, at his own expense, have a qualified electrician modify the power outlets and/or circuit breakers he intends to use that do not meet these criteria.

.14 If the work in confined spaces requires hot work, the Contractor must obtain a hot work permit and must comply with the requirements to this effect.

.15 The Contractor must assign a competent person to perform the duties of supervisor. The supervisor must be assigned exclusively to these duties and must remain permanently outside the confined space if there is a worker inside. In addition, it must:

- .1 verify that the entry permit is completed, signed and posted next to the confined space;
- .2 be familiar with the confined space-specific work procedure and ensure that it is followed;
- .3 ensure constant communication with all workers in the confined space. ensure that the necessary equipment in the event of an emergency is in place;
- .4 be familiar with the auxiliary ventilation systems and ensure their proper operation for the duration of the work;
- .5 prevent access to unauthorized persons;
- .6 ensure that the conditions of the area surrounding the confined space do not affect the health and safety of workers inside the confined space.
- .7 initiate the emergency procedure if necessary.

.16 The same person may assume the functions of supervisor and person responsible for the health and safety of confined space work, if he or she can meet all the requirements of both functions.

1.34 DRIVAGE WORK

In addition to the requirements *of the Safety Code for Construction* Work, the Contractor who performs trenching or excavation work must meet the following requirements:

.1 Complete the form below and send it to the Department Representative before the start of the excavation work.

.2 Transmit to the Department Representative the following documents:

.1 plans and specifications, signed and sealed by an engineer, of the props to be put in place for the excavation work; or

.2 engineer's opinion specifying the angle of the walls of the trench or excavation.

Directive de creusage

N°_____ de_____

Cette directive de creusage est fournie à titre d'exemple par la Commission de la santé et de la sécurité du travail (CSST). On y trouve les principales indications que l'employeur devrait donner à la personne responsable des travaux sur le terrain et à l'opérateur de l'engin de terrassement.

Nom de l'entreprise	
Nom du projet	N° du projet
Adresse du chantier	Date du début des travaux

Repérage

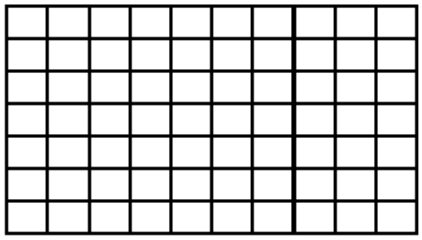
Chaînage ou axes : de _____ à _____ Plan annexé ☐ N° du plan : _____

Méthode de travail à utiliser

Tout en s'assurant que les parois ne présentent aucun danger de glissement de terrain,

- ☐ **creuser et étançonner** selon les plans et devis d'un ingénieur ;
- ☐ **creuser et étançonner** en utilisant une boîte de tranchée ;
- ☐ **creuser sans étançonner** pourvu que l'une des conditions suivantes soit respectée :
  - ☐ le roc est sain ;
  - ☐ aucun travailleur ne descend dans la tranchée ou l'excavation ;
  - ☐ les parois sont creusées conformément à l'avis d'un ingénieur.

Dimensions du creusement (Creuser selon le profil suivant.)



	Minimale	Maximale
H Profondeur		
Lf Largeur au fond		
Ls Largeur en surface		

Mesures de sécurité

Déposer les matériaux à une distance d'au moins 1,2 mètre (4 pi) du sommet des parois.
Ne laisser aucun véhicule s'approcher à moins de 3 mètres (10 pi) du sommet des parois.

- ☐ Respecter le plan de l'ingénieur concernant les travaux à proximité d'une construction existante.
- ☐ Suivre le plan de localisation pour repérer les infrastructures souterraines.
- ☐ Installer le matériel de signalisation prévu par le plan de circulation (barrières, repères visuels, etc.).
- ☐ Affecter un ou des signaleurs au contrôle de la circulation.
- ☐ Respecter la méthode prévue pour le travail à proximité des lignes électriques.
- ☐ Mettre en place les dispositifs de protection des travailleurs, par exemple les glissières de sécurité en béton.

Nom	Fonction	
Signature	Date	N° de téléphone

Directive remise

☐ au responsable des travaux sur le terrain ☐ à l'opérateur de l'engin de terrassement

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1.35 LIFTING LOADS USING A CRANE OR CRANE TRUCK

.1 Unless otherwise specified, the Contractor must prepare a lifting plan and send it to the Departmental Representative for any lifting operation carried out using a crane or crane truck at least 5 days before the start of the lifting operations covered by this plan. This lifting plan must contain at least the information listed at the end of this section.

.2 The lifting plan must be signed and sealed by an engineer for the following lifting operations:

- .1 lifting concrete panels;
- .2 lifting mechanical/electrical equipment on a roof or floors of a building;
- .3 lifting loads that encroach on a public highway;
- .4 lifting large loads or heavy goods vehicles;
- .5 any other lifting operation, as required by the Department Representative.

.3 In addition to the above requirements, the Contractor must plan lifting operations in such a way as to prevent loads from passing over occupied areas on a site. Where it is impossible to do otherwise, the lifting plan must be signed and sealed by an engineer and must guarantee the safety of the occupants of this area; this plan must be approved by the Department Representative. The Department Representative may, if he deems it necessary, impose evening and weekend work.

.4 From the beginning of the work on the site, the Contractor must send the Department Representative the list of lifting plans planned for the entire duration of the project. This list will need to be updated as necessary if changes are made during the work.

.5 In addition to the mechanical inspection certificate, all cranes or crane trucks must have the annual inspection certificate and crane logbook on board the cab.

.6 The entire lifting area must be demarcated in such a way as to prevent any person not authorized to enter it.

.7 The Contractor must carefully inspect all slings and lifting accessories to ensure that those in poor condition are destroyed and disposed of.

.8 The lifting of compressed gas cylinders must be done using a basket specially designed for this purpose.

Minimum content of a lifting plan

- .1 Sketch indicating at least the location of the crane, the surrounding facilities, the area covered by lifting operations, pedestrian and vehicle traffic lanes, the security perimeter, etc.
- .2 Weight of loads
- .3 Load dimensions
- .4 List of lifting accessories and weight of each
- .5 Total weight lifted
- .6 Maximum height of obstacles to be overcome
- .7 Lifting height of loads relative to the roof surface (in the case of lifting loads to be placed on roofs)

.8 Use of guide cables
.9 Type of crane used
.10 Crane capacity
.11 Arrow length
.12 Angle of the arrow
.13 Radius of action of the crane
.14 Deploying Stabilizers
.15 Percentage of crane capacity utilization
.16 Confirmation of verification of lifting equipment
.17 Identification of the crane operator and the person in charge of lifting operations with signatures and date

1.36 HOT WORK

Hot work refers to all work that uses an open flame or that can produce heat or sparks such as riveting, welding, cutting, brazing, grinding, burning, heating, etc.

.1 At the beginning of each shift and for each sector, the Contractor must prepare a "Hot Work Permit".

.2 A functional portable fire extinguisher suitable for the risk of fire must be available and easily accessible within a radius of 5 m from any flame and source of sparks or intense heat.

.3 The Contractor shall designate a person to conduct ongoing fire hazard monitoring for a minimum period of one (1) hour after the completion of each hot work. This person must sign the section of the permit for this purpose and hand it over to the site manager after the one-hour period.

.4 When hot work is performed in areas where combustible materials are located or whose walls, ceilings or floors are made of or coated with combustible materials, a final inspection of the work area must be scheduled four (4) hours after the completion of the work. Unless otherwise advised by the Departmental Representative, the Contractor must designate a person to carry out this monitoring.

Welding and cutting

In addition to the requirements set out in the preceding paragraphs, the Contractor must comply with the following requirements:

.1 Welding and cutting work must be performed in accordance with the requirements *of the Construction Safety Code, S-2.1,r.4* and CSA W117.2 *Safety Rules for Welding, Cutting and Related Processes.*

.2 Use an air extraction system with filters for any welding or cutting work done indoors.

.3 Interrupt any activity that produces flammable or combustible gases, vapors or dusts in the vicinity of welding or cutting work.

.4 Store compressed gas cylinders on a fireproof surface and ensure that the room is well ventilated.

.5 Store all oxygen cylinders at a minimum distance of 6 meters from cylinders of flammable gas (e.g., acetylene) or a combustible material such as oil or grease, unless separated by a bulkhead made of non-combustible material as specified in Article 3.13.4. *of the Safety Code for Construction Work, S-2.1,r.4.*

.6 Store bottles away from all sources of heat.

.7 Do not store bottles near stairs, exits, corridors and elevators.

.8 Do not put acetylene in contact with metals with metals such as silver, mercury, copper, and brass alloys having more than 65% copper, to avoid the risk of an explosive reaction.

.9 Check that the electric arc welding equipment has the required voltage and is grounded.

.10 Ensure that the conductive wires of the electric welding device are not damaged.

.11 Place welding equipment on flat ground away from the weather

.12 Install fireproof fabrics when welding work is done in superposition and where there is a risk of sparks falling.

.13 Keep away or protect flammable or combustible materials that are within 15 meters of welding work.

.14 Never weld or cut on a closed container.

.15 Do not cut, weld or open flame work on receptacles, tanks, pipes, or other containers that have contained a substance or residues of flammable or explosive products unless:

.16 they have been cleaned and air samples have been taken indicating the absence of explosive vapors;

.17 arrangements have been made to ensure the safety of workers.

1.37 ROOFING WORK

Protection against falls from a height

.1 The installation of guardrails is always mandatory; however, the installation of a warning line is permitted to delineate work areas provided that all the requirements of sections 2.9.4.0 and 2.9.4.1 *of the Safety Code for Construction Work* are met.

.2 Guardrails must remain in place until the very end of the project. The Department Representative will authorize their dismantling when he can confirm that all the required work, inspections and corrections have been carried out.

.3 The wearing of the safety harness is mandatory for the installation of guardrails.

.4 The wearing of the safety harness is mandatory for the installation and modification of parapets or flashings if it is necessary to temporarily move the guardrails.

.5 The wearing of the safety harness is mandatory for the reception of equipment and signals to the crane at the edge of the void.

.6 The wearing of a safety harness is mandatory for any work at the edge of the void where collective protection does not offer adequate safety.

.7 The Contractor must provide a method of attachment and emergency cable system in accordance with section 2.10.12 of *the Safety Code for Construction Work (R.S.Q., S-2.1, r.4)* for each different sector or workplace.

Lifting of materials

.1 For any winch installation, the contractor must transmit to the Department Representative the installation process recommended by the manufacturer or, failing that, an installation process signed and sealed by an engineer. The installation process must consider, in particular, the maximum permissible loads, the number, weight and location of the counterweights and any other details which may affect the capacity and stability of the apparatus.

.2 The Contractor must carefully inspect all slings and lifting accessories and ensure that those in poor condition are destroyed and disposed of.

.3 The lifting of compressed gas cylinders must be done using a basket specially designed for this purpose.

.4 For any use of a crane or crane truck, the Contractor must comply with the requirements of the paragraph "Lifting loads using a crane or crane truck" of this section.

Protection against burns

.1 Persons assigned to hot water bottles must wear long sleeves and safety glasses and a face shield for loading the hot water bottle.

.2 Those affected work on bitumen or other hot liquids must wear gloves, long sleeves, and safety glasses.

Fire protection

.1 The storage and use of propane cylinders must comply with *CAN/CSA-B149.2 Propane Storage and Handling Code*. Cylinders must be stored outdoors, in a safe place, away from unauthorized handling, in a place where there is no movement of vehicles or equipment unless they are protected by barriers or an equivalent means of protection.

.2 The quantity of propane cylinders on the roof must not exceed that required for a working day and the cylinders must always be attached standing or held vertically in a trolley designed for this purpose.

.3 All hot work (burning, heating, riveting, welding, cutting, grinding, etc.) must be carried out in accordance with the "Hot work" paragraph of this section.

Materials and waste management

.1 On the roof, lightweight materials and sheet materials should be kept in containers or securely attached. In the event of a derogation, the Department Representative may prohibit the storage of materials on the roof.

.2 Waste must be disposed of as and when by a waste chute or in appropriate containers; the Entrepreneur must put in place means to prevent the waste from going to the wind.

.3 All waste must be disposed of from the roof at the end of each shift.

.4 Unless specially authorized by the Department Representative, any dumpster must be placed at least 3m from any structure or building.

Protection of occupants and the public

.1 The Contractor must install covered passageways, nets, or other devices to protect workers, the public and occupants against falling objects vis-à-vis the entrances and exits of the building. The chosen means of protection must be approved by the Department Representative.

.2 A ground safety perimeter must be established under the work area to protect workers, the public and occupants.

.3 The groundwork area, the materials handling area, and the area where the hot water bottle is installed must be clearly barricaded so that occupants and the public cannot access it.

.4 Before installing any device likely to emit gases or vapours, the Contractor must obtain the authorization of the site manager. The latter will ensure that there is no risk of infiltration into the building's ventilation systems.

1.38 ASSEMBLY OR DISMANTLING OF METAL FRAMES

.1 In addition to complying with section 3.24 *of the Safety Code for Construction Work* (S-2.1, r.4), the Contractor must comply with the requirements set out in the following paragraphs.

.2 The Contractor must send the following documents to the Department Representative before the start of the work of assembling metal frames:

.1 assembly procedure in accordance with section 3.24.10 *of the Safety Code for Construction Work* (S-2.1, r.4);

.2 rescue procedure for the release of a worker suspended in a safety harness within a maximum period of 15 minutes, adapted to the construction site and in accordance with article 3.24.4 of the same Code; this procedure must be accompanied by written confirmation that it has been tested;

.3 engineer's certificate that the anchorage rods have been installed in accordance with the anchorage plan, as required by section 3.24.12 of that Code;

.4 lifting procedure, where the lifting is done in one of the ways indicated in section 3.24.15 of that Code;

.5 name of the person identified as a rescuer and certificate of rescue training of that person;

.6 name of the person identified as a first aid worker and certificate of first aid training of that person;

.3 The Contractor must ensure that the following documents are always available on the site for consultation:

.1 Assembly plan of the manufacturer of the metal frame in accordance with the requirements of section 3.24.9 *of the Safety Code for Construction Work* (S-2.1, r.4);

.2 Anchoring plan for the anchoring rods of poles in accordance with the requirements of section 3.24.11 *of the Safety Code for Construction Work* (S-2.1, r.4);

1.39 WORK NEAR A BODY OF WATER

.1 For all work carried out near a body of water (including work above water, work on a wharf, work along a watercourse, etc.), the Contractor must comply with the requirements of the following paragraphs in addition to complying with the requirements *of the Safety Code for Construction Work*.

.2 The Contractor must plan its work in such a way as to put in place safety measures to prevent any worker from falling into the water. The use of these safety measures must be preferred to the wearing of the life jacket.

.3 Send the following documents to the Department Representative, before the start of the work:

.1 description of the body of water;

.2 description of the work carried out in the vicinity of this body of water;

.3 water transport plan adapted to the work and characteristics of the water body;

.4 rescue plan adapted to the work and the characteristics of the body of water;

.4 Each of the documents listed above must contain at least the information required in section 11 *of the Safety Code for Construction Work.*

.5 If it is possible that all or part of the work will take place during the winter period, the safety measures included in the documents required above must be adapted accordingly.

.6 The Contractor must send to the Department Representative the certificate of training required by section 11.2 *of the Safety Code for Construction Work*, for the following persons:

.1 the person designated to prepare the documents required in the preceding paragraph; and

.2 each person responsible for transport or rescue operations.

.7 If the rescue plan provides for the use of a boat, the Contractor must send to the Departmental Representative the lifeguards' card or certificate of competency for its work, issued by Transport Canada.

.8 The Contractor must include in its weekly inspection schedule the devices required by sections 11.4 and 11.5 *of the Safety Code for Construction Work.*

.9 Ensure that a lifeboat moored and in the water is available at each location where a worker is likely to fall into the water. However, a boat may serve several places on the same site provided that the distance between each of these places and the boat is less than 30 m.

.10 Where the workplace is a pier, basin, jetty, wharf or other similar structure, a ladder with at least two (2) rungs below the water surface shall be installed on the front of the structure, every 60 m.

1.40 USE OF INTERNAL COMBUSTION ENGINES INDOORS

.1 In addition to complying with section 3.10.17 of the Safety Code for Construction Work (S-2.1, r.4), the Contractor must comply with the requirements set out in the following paragraphs.

.2 The use of gasoline-powered equipment inside a building is prohibited, even if the building has openings.

.3 The use of other equipment equipped with internal combustion engines inside a building must be subject to the authorization of the Department Representative.

.4 For any use of equipment equipped with an internal combustion engine inside a building, even if the building is equipped with openings, the Contractor must install a ventilation system to keep the concentrations of toxic gases below the regulatory values. Stale air must be evacuated outside the building.

.1 Prior to the use of equipment equipped with an internal combustion engine, the Contractor must plan in writing the following:

.2 number of fans to be installed;

.3 fan power;

.4 location of fans;

.5 dimensions of the openings that will be opened during the work.

.5 During the operation of equipment equipped with an internal combustion engine, the Contractor must measure the concentration of carbon monoxide and nitrogen oxides in the work area, at the level of the respiratory zone of the workers; the measured concentration levels must be recorded every 30 minutes in a register available for consultation.

.6 If the work takes place in an occupied building, the Contractor must also measure the concentration of carbon monoxide and nitrogen oxides every 30 minutes in the premises adjacent to the work area and record these values in a register.

.7 If the alarm for carbon monoxide or nitrogen oxide detectors is triggered during the work, the Contractor must suspend the work and make the necessary corrections before resuming the work.

.8 A portable fire extinguisher must be always available in the work area during the use of equipment equipped with an internal combustion engine.

.9 Equipment must be kept at a safe distance from any combustible material.

.10 Fuel storage for equipment with internal combustion engines is permitted inside a building.

1.41 TEMPORARY HEATING

.1 In addition to complying with section 3.11 of *the Safety Code for Construction Work* (S-2.1, r.4), the Contractor must comply with the requirements set out in the following paragraphs.

.2 A portable fire extinguisher must be always available in the vicinity of the heaters, regardless of the type of heating used.

.3 Devices should always be used according to the manufacturer's specifications.

.4 Where applicable, canvas and tarpaulins used in the vicinity of heaters must be securely attached so that they cannot be projected onto these appliances, on the piping connected to these appliances or on any other source of heat.

.5 Gas cylinders must be installed in such a way as to be protected from the use of vehicles and other equipment.

.6 For any use of non-electric heaters, the Contractor must install a carbon monoxide detector in the work area, near appliances and/or workers, for the duration of the heating period. The Contractor must immediately make the necessary corrections to the heating installations if the alarm of the detector sounds.

.7 The Contractor must provide minimal monitoring of heaters outside of working hours (evenings and weekends). He must submit a monitoring plan to the Department Representative before using the heaters.

1.42 WORK NEAR OVERHEAD POWER LINES

.1 Where an overhead power line is present in the work area and the Contractor chooses to apply paragraph (b) of section 5.2.2 of the *Safety Code for Construction Work* (2.1, r.4), a copy of the agreement with the electrical operating company and a copy of the work process, required by section 5.2.2 (b), must be sent to the Department Representative before the start of work related to these documents.

1.43 DIVING WORK

.1 Not used.

1.44 OHS SUBORDINATION AGREEMENT

Project: _____

EXTERNAL CONTRACTOR

I hereby undertake to submit to the authority of (name of the prime contractor) ___ Therefore, I confirm that I have read the prime contractor's prevention program and I undertake to:

- inform my employees of the content of the prime contractor's prevention program and ensure that its content is respected at all times;
- provide the prevention program specific to our activities carried out within the framework of this project
- inform the prime contractor of my interventions on the site and obtain his agreement before proceeding with the work;
- follow the health and safety instructions given by the supervisor's representative on the site and attend, as required, the training activities and health and safety meetings he organizes.

Name of representative: _____

Company Name: __

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

Approximate dates of work (start-end): __

Signature: _____ Date : _____

PRIME CONTRACTOR

I hereby undertake to allow the company (name of external contractor) _____ In the event that the Contractor repeatedly refuses or fails to comply with my instructions, I undertake to inform the Departmental Representative of PWGSC and to provide documentary evidence of my interventions with the Contractor.

Name of representative: _____

Name of prime contractor: __

Signature: _____ Date : _____

Provide the completed and signed copy to PWGSC's departmental representative

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Appendix A – List of Environmental Mitigation Measures.

.1 The list will be transmitted to the lowest compliant bidder.

.2 Appendix B – Environmental Monitoring Form.

1.2 DEFINITIONS

.1 Pollution and damage to the environment: the presence of chemical, physical or biological elements or agents that have a harmful effect on human health and well-being, that alter ecological balances important to humans and that constitute an attack on species that play an important role for humans or that degrade the aesthetic, cultural or historical character of the environment.

.2 Environmental protection: prevention/control of pollution and disturbance of habitat and the environment during construction.

.3 Temporary sediment barrier: This type of temporary barrier consists of a geotextile supported by wooden or metal poles. Posts must be spaced no more than 1.2 m apart for non-woven geotextiles and 2 m for woven geotextiles.

.4 Watercourse: water flowing through a channel with a regular or intermittent flow, including water created or modified by human intervention.

1.3 REFERENCE STANDARDS

.1 Environmental protection must be ensured in accordance with the requirements of this specification and the following normative references:

.1 Government of Canada

.1 Laws of Canada

.1 Canadian Environmental Protection Act, 1999 (S.C. 1999, c. 33).

.2 Species at Risk Act (S.C. 2002, c. 29).

.3 Fisheries Act (R.S.C, 1985, c. F-14).

.4 Migratory Birds Convention Act, 1994 (S.C. 1,994, c. 22)

.2 Government of Quebec

.1 Laws and regulations of Quebec:

.1 Environment Quality Act (R.L.R.Q., chapter Q-2), 2018;

.1 Solid Waste Regulation (R.L.R.Q., chapter Q-2, r. 13), 2013;

.2 Regulation respecting the burial of contaminated soil (R.L.R.Q., chapter Q-2, r. 18), 2018;

.3 Regulation respecting the burial and incineration of residual materials (R.L.R.Q., chapter Q-2, r. 19)

.4 Regulation respecting hazardous materials (R.L.R.Q., chapter Q-2, r. 32)

.5 Regulation respecting the protection and rehabilitation of land (R.L.R.Q., chapter Q-2, r. 37)

.6 Regulation respecting the transportation of dangerous goods R.L.R.Q.C-24.2, r.43.

.7 Regulation respecting the storage and transfer centers of contaminated soil (R.L.R.Q., chapter Q-2, r. 46)

.8 Regulation respecting the traceability of excavated contaminated soil (RCTSCE) R.L.R.Q. chapter Q-2, r. 47.01.

.2 MELCC Surface Water Quality Criteria (Protection of Aquatic Life – Acute Effect)

.3 Management of contaminated soils

.1 Intervention Guide – Soil Protection and Rehabilitation of Contaminated Land (MELCC, 2016).

.2 Ministère du Développement durable, de l'Environnement et des Parcs du Québec: Sampling guide for environnemental analysis: Workbook 5 – Soil sampling, 2010;

.3 Ministère du Développement durable, de l'Environnement, de la Faune et des Parcs du Québec, Modes de conservation pour l'échantillonnage des sols, 2013;

.3 United States Environmental Protection Agency (USEPA), Office of Water

.1 EPA-833-R-06-004, Developing Your Stormwater Pollution Prevention Plan, A Guide for Construction Sites

.2 The normative and general documents mentioned above are complementary, regardless of the nature of the work to be carried out. In the event of any contradiction between these documents and this estimate, the latter shall take precedence.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit the required documents and samples in accordance with section 01 33 00 – Submittal Procedures

.2 Product Data

.1 Submit the required data sheets as well as the instructions and documentation of the manufacturer concerned. The data sheets must indicate the characteristics of the products, the performance criteria, the dimensions, the limits, and the finish.

.3 Submit an Environmental Protection Plan (EPP) to the Departmental Representative for review and approval prior to the delivery of materials and materials to the site or the start of construction activities.

.4 The EPP must provide a comprehensive overview of known or potential environmental issues to be addressed on site during construction.

.5 The actions included in the environmental protection plan must be presented at a level of detail that is in line with the environmental problems and with the construction work to be carried out.

.6 The Environmental Protection Plan (EPP) must include the following.

.1 The names of the persons responsible for ensuring compliance with the EPP.

.2 The name and skills of the persons responsible for the release manifests of hazardous waste to be evacuated from the site.

.3 The name and skills of the persons responsible for the training of site personnel.

.4 A description of the training program for personnel assigned to environmental protection.

.5 Submit a site-specific Stormwater Pollution Prevention Plan (PPSP) in accordance with EPA-833-R-06-004. Include a site-specific sediment erosion and transport prevention plan indicating the type and measures that will be implemented, including monitoring and reporting to verify compliance with federal, provincial, and municipal laws and regulations.

.6 Submit drawings showing the location of temporary excavations or backfilled construction tracks, river crossings, materials, constructions, sanitary facilities, deposits of surplus or soiled materials; drawings illustrating the methods that will be used to control runoff and to confine materials to the site.

.7 Submit a Traffic Control Plan (CRP), including measures to reduce traffic erosion of construction vehicles, particularly in rainy weather, of temporary and existing road platforms.

.1 The CRP must include measures to reduce the transfer of materials on public roads by vehicles or runoff.

.8 Submit a Work Area Plan (TZMP) showing the work areas for each of the planned activities and indicating the restricted use areas as well as the prohibited areas.

.1 The TZMP shall include measures to mark the boundaries of usable areas and methods of protecting elements within authorized work areas that must be preserved.

.9 Submit a Spill Contingency Plan (PUCD) to include procedures, instructions to follow and reports in the event of an unpredictable spill of a controlled substance.

.10 Submit a Solid Waste Disposal Plan (SMP) for non-hazardous solid waste that includes methods and disposal locations for this solid waste and debris from the clearing work.

.11 Submit an Air Pollution Prevention Plan (AIPP) outlining measures to retain dust, debris, materials, and waste inside the project.

.12 Submit a site-specific Contamination Prevention Plan (CMP) outlining appropriate methods and measures to prevent hazardous materials from being released on site. The contamination prevention plan aims to:

.1 Prevent hazardous materials from being suspended in air or water or from being introduced into the soil;

.2 List the measures taken for the storage and handling of these materials in accordance with federal, provincial, and municipal laws and regulations.

.13 Submit a Wastewater Management Plan (WMP), outlining the methods and procedures to be implemented for the management and disposal of wastewater directly from construction activities, such as water used for concrete curing, washing/cleaning, groundwater drawdown, disinfection, hydrostatic testing, and pipe rinsing water.

.14 Submit a Designation and Protection Plan (PDP) that sets out procedures for the designation and protection of wetlands and the historical, archaeological, cultural, and biological character.

1.5 POLLUTION CONTROL

.1 Refer to the List of Environmental Mitigation Measures in Appendix A.

.2 Maintain temporary facilities established under this Contract to prevent erosion and pollution.

.3 The control of the fumes released by the material, equipment, vehicles, and installations must be ensured by the Contractor, in accordance with the requirements of local, federal, provincial and municipal authorities.

.4 The "idling" of vehicles is prohibited unless special permission is given by the Representative of the Ministry.

1.6 FIRES

.1 Refer to the List of Environmental Mitigation Measures in Appendix A.

.2 Fires and burning of waste on the construction site are prohibited.

1.7 CONDITION OF MACHINERY, TOOLS, AND EQUIPMENT

.1 Refer to the List of Environmental Mitigation Measures in Appendix A.

.2 The Contractor must ensure that the machinery, tools, and equipment that will be used to perform the work are safe, clean and in good working order. The Departmental Representative reserves the right to refuse access or to expel from the site machinery, tools and equipment that do not meet these requirements. Equipment that is visibly poorly maintained and shows evidence of leaks or risk of leaks will be returned from the site at the expense of the Contractor or the owner of the equipment, at no cost to the Crown.

1.8 DRAINAGE

.1 Refer to the List of Environmental Mitigation Measures in Appendix A.

.2 Verify that a plan of measures against erosion and sediment transport has been adopted and verify, throughout the duration of the work, whether the recommendations contained in the plan for the site are being followed, in accordance with the stormwater pollution prevention plan.

.3 Provide for temporary drainage and pumping necessary to keep excavations on site dry.

- .1 Obtain approval from the Departmental Representative before pumping standing water into streams, sewers, or drains. Stagnant water must be free of suspended solids.
- .2 Control the discharge or runoff of water that contains suspended or other hazardous materials in accordance with the site-specific run off EPP and the requirements of the competent authorities.

1.9 VEGETATION PROTECTION

.1 Ensure the protection of trees and plants on the construction site and on adjacent properties in the places indicated.

.2 Minimize the removal of topsoil and vegetation.

.3 Provide storage sites by targeting areas without vegetation or with less environmental effects.

.4 Ensure that the machinery is clean and free of invasive alien plant species (OEE) and noxious weeds upon arrival at the site and maintain it in this state thereafter.

.5 Vegetate bare areas as quickly as possible to control soil erosion.

.6 Before the work, set up visible protection zones (no-circulation zone) of at least 2 m around invasive alien plant species (EEEs) and species of precarious status previously identified by the flora specialist of the representative of the Ministry, if applicable.

.7 Where possible, avoid EVEEs and species of precarious status when setting up the construction site, access roads and storage areas, if applicable.

.8 If EVEEs cannot be avoided, inspect, and clean any machinery that has meet these species using high-pressure air or other tools such as brushes, brooms, shovels, or vacuum cleaners. This operation must be carried out in a washing area which makes it possible to confine all the solid residues.

.9 Treat separately excavated soils under identified EVEE colonies (priority species) or in the 2 m buffer strip, up to a depth of 2 m, as soils contaminated with EVEE.

.10 Soils contaminated with EVEE (priority species) should be deposited in a confined location or directly in transport trucks, pending off-site transport, if applicable.

.11 Revegetation of the areas laid bare at the end of the work using a mixture of seeds of native species compatible with the nature of the soil and the surrounding environment.

1.10 WORK ADJACENT TO WATERWAYS

.1 Refer to the List of Environmental Mitigation Measures in Appendix A.

.2 The final discharge point of the wastewater treatment system east of the work site is considered a watercourse.

.3 Limit interventions in the watercourse in the lower tier, except for the area at the junction of the water discharge.

.4 Construction machinery should be used from the shore only.

.5 The Contractor must use a biodegradable hydraulic fluid, for the machinery near the watercourse and in the riparian strip, even if the work is carried out dry. The hydraulic fluid must have an ultimate biodegradation rate of more than 60% in 28 days.

.1 Provide the certificate and the technical sheet of the biodegradable fluid.

.6 Extract borrowed materials from riverbeds only after obtaining written approval from the Departmental Representative.

.7 Watercourses must remain free of debris, scrap materials or debris.

.8 Design and construct culverts or other temporary watercourse crossings to minimize erosion.

.9 Do not slide logs or building materials from one side of watercourses to the other.

.10 Fuel transfer or any procedure using hazardous products must implement the procedures to be followed in the event of a spill. This procedure must be displayed in full view of the employees, on the site of the work. Fuel transfer must be carried out at 30 m from the watercourse. During these operations, oil spill kits will need to be accessible.

1.11 POLLUTION CONTROL

.1 Refer to the List of Environmental Mitigation Measures in Appendix A.

.2 Maintain temporary facilities to prevent erosion and pollution, and established under this contract, in accordance with the site-specific stormwater pollution prevention plan.

.1 If temporary facilities are left in place during the winter, schedule visits during melting to ensure that measures are still in place and effective.

.3 Control emissions from machinery and equipment in accordance with the requirements of local authorities. Check with local authorities for environmental compliance requirements, if any.

.4 Prevent blasting materials and other foreign matter from contaminating the air and waterways beyond the application area.

.1 Provide temporary shelters as directed by the Ministry Representative.

.5 Water dry materials and cover waste to prevent wind from lifting dust or carrying debris. Remove dust on temporary paths.

.6 If the Contractor is to store hazardous materials and oil, for the purposes of the project, it must have retention bins on the storage site. Large quantities of hazardous materials cannot be stored on site.

.7 The Contractor must have at least on hand, at the site of the work, an emergency response kit to respond to events requiring an environmental response. However, this response kit must include and group together a minimum of appropriate equipment and devices to contain any spill in a manner that minimizes the risk of spreading contamination caused by a spill of oil, hazardous products, or other contaminants. This emergency kit identified emergency - environment must contain:

.1 A form containing the information to reach "Urgence-Environnement du Québec": 418 643-4595 or the toll-free number 1 866 694-545

.2 An absorbent flange 3 inches in diameter, length 12 feet;

.3 An absorbent flange 3 inches in diameter, length 4 feet;

.4 Twenty-five absorbent layers;

.5 Two bags of 7 liter absorbent (Sphagnum moss type or vegetable equivalent);

.6 An epoxy stick;

.7 Two DANGER posters;

.8 Three plastic recovery bags;
.9 TDG (Transport of Dangerous Goods) self-adhesive labels Class 4.1;
.10 An indelible marker pencil;
.11 Two pairs of rubber gloves;
.12 Two pairs of goggles;
.13 Adhesive tape type "Duct Tape";
.14 Some tools: cutting pliers and screwdrivers;
.15 Declaration forms;

1.12 NOISE MANAGEMENT

.1 Refer to the List of Environmental Mitigation Measures in Appendix A.

1.13 MITIGATION MEASURES - AQUATIC WILDLIFE AND HABITAT

.1 Refer to the List of Environmental Mitigation Measures in Appendix A.

.2 Perform work in fish habitat between August 1 and April 15, which is during the period that protects fish, including eggs, juveniles and spawning adults, and the organisms on which they feed.

1.14 PRESERVATION OF HISTORICAL/ARCHAEOLOGICAL CHARACTER

.1 Temporarily interrupt work in the event of incidental discoveries of a potential archaeological property during excavations and have the discovery evaluated by a specialist in the archaeological field.

1.15 NOTICE OF NON-COMPLIANCE

.1 A written notice of non-compliance will be issued to the Contractor by the Departmental Representative whenever there is non-compliance with any federal or provincial environmental law or regulation or municipal regulation, by-law or permit, or any other element of site-specific plans, such as a PEP, PPPER, PRC, PUCD, PEDS, PPPA, PPC, PGEU, PTP and PDP, as applicable.

.2 Upon receipt of a notice of non-compliance, the Contractor must propose corrective measures to the Departmental Representative and must implement them with the approval of the latter.

.1 The Contractor must wait until it has obtained the approval by the Departmental Representative before proceeding with the implementation of the proposed measures.

.3 The Departmental Representative will order the halt of work until satisfactory corrective action is taken.

.4 No additional time or adjustment will be granted for the stoppage of work.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 PREPARATORY WORK

.1 Environmental protection measures

.1 Water from the dewatering of excavations and cofferdams must be discharged into a sedimentation pond or natural filter, i.e. a vegetation zone, according to the following requirements:

.1 The sedimentation pond must be designed according to the flow to be received and evacuated.

.2 The unaerated pond may be used to direct the pumping water of the excavation.

.3 When the sedimentation basin is 50% filled, it must be cleaned.

.4 Preventive cleaning must be carried out during the prolonged temporary closure of a construction site.

.5 Preventive cleaning should also be carried out during a weather alert announcing heavy rains.

.6 the natural filter must be in a grass field (grasses) or in a bog or forest litter; the Contractor must obtain the authorization of the Departmental Representative for the selection of the location

.7 Regularly move the water outlet to properly distribute sedimentary deposits, to avoid destroying vegetation.

.8 Where there is a risk of erosion, the soil must be stabilized; if necessary, the installation of a pipe or geotextile or the construction of a stonework must be carried out.

.9 The infiltration wells/sedimentation basins of the water pumped from the excavation must be dismantled at the end of the work, and the area they occupied must be redeveloped and re-vegetated if necessary.

.2 The temporary sediment barrier serves to trap sediment, while allowing water to trickle through. It must be installed in places where the flow takes place in a tablecloth. Its use across a concentrated water flow should be avoided. To be functional, the base of the geotextile must be buried in the ground and firmly anchored, so that runoff does not pass underneath and does not take off its shoes. On long slopes, the installation of more than one row of barriers may be necessary to reduce the speed of flow and the risk of gully. It must always be installed perpendicular to the slope to follow the topographical contours. The ends of the barrier must be curved upstream to contain the captured sediments. Periodic maintenance must be carried out by removing sediments. The geotextile barrier is removed and recovered when the stripped surfaces are permanently stabilized.

.3 Sediment barriers with a geotextile can be installed at the following locations:

.1 at the downstream perimeter of a bare surface.

.2 on slopes of 2H:1V and below.

.3 where the flow distance upstream of the barrier does not exceed 20 m.

.4 at the foot of the embankments when there is a watercourse or ditch.

.5 at the bottom of an embankment with a water supply that induces erosion (e.g., resurgence of water).

3.2 CLEANING

.1 Cleaning during work: perform the cleaning work in accordance with section 01 74 00 - Cleaning.

.1 Leave the premises clean at the end of each day.

.2 Bury waste and scrap materials on the site only after obtaining written permission from the Departmental Representative.

.3 Ensure that public storm and sanitary waterways and sewers remain free of waste and volatile materials disposed of.

.4 Final cleaning: remove surplus materials, waste, tools, and equipment from the site in accordance with section 01 74 00 - Cleaning.

.5 Waste management: sorting waste for reuse/re-use and recycling.

.1 Remove recycling bins and dumpsters from the job site and dispose of materials at the appropriate facilities.

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 This section refers to laws, by-laws, ordinances, regulations, codes, orders of competent authorities and other enforceable requirements applicable to the work and that are in force, before the commencement of the work or that come into force while the work is in progress.

1.2 RELATED REQUIREMENTS

.1 All sections of the specifications.

1.3 REFERENCE TO REGULATORY REQUIREMENTS

.1 Department of Justice Canada (Jus)

.1 SOR/2018-196 Prohibition of Asbestos and Products Containing Asbestos Regulations.

.2 Carry out the work in accordance with the requirements of the National Building Code of Canada (2015) and the Quebec Construction Code, including changes to the deadline for receipt of tenders as well as other provincial or local codes, provided that the most severe terms and conditions apply in the event of a conflict or discrepancy.

.3 The design and performance requirements listed in the specifications or indicated in the drawings may exceed the minimum requirements established by the building code referred to by reference; these requirements will take precedence over the minimum requirements set out in the building code.

.1 The work must meet or exceed the requirements of the documents mentioned below.

.1 Contractual Documents.

.2 Prescribed standards, codes, and other reference documents.

1.4 BULDING SMOKING ENVIRONMENT

.1 Comply with smoking restrictions and municipal by-laws.

1.5 NATIONAL PARKS ACT

.1 Carry out the work in accordance with the following laws:

.1 Canada National Parks Act (S.C. 2000, c. 32) when the national parks are operated within the boundaries of a national park;

.2 Canada Wildlife Act (CRA, 1985, c. W-9);

.3 Wildlife Area Regulations (C.R.C., c. 1609).

.1 Provincial Jurisdiction - Government of Quebec

.1 Comply with the latest version of the Act respecting occupational health and safety of the Province of Quebec (CNESST), as well as the regulations resulting from it.

.2 Recueil des Lois et règlements du Québec (R.L.R.Q), versions of November 30, 2017:

.1 Environment Quality Act (R.L.R.Q., chapter Q-2)

.2 Regulation respecting the burial of contaminated soil (R.L.R.Q., chapter Q-2, r. 18)

.3 Regulation respecting the burial and incineration of residual materials (R.L.R.Q., chapter Q-2, r. 19)

.4 Regulation respecting hazardous materials (R.L.R.Q., chapter Q-2, r. 32)

.5 Regulation respecting the protection and rehabilitation of land (R.L.R.Q., chapter Q-2, r. 37)

.6 Regulation respecting the storage and transfer centres of contaminated soil (R.L.R.Q., chapter Q-2, r. 46)

.7 Regulation respecting the transportation of dangerous goods R.L.R.Q.C-24.2, r.43

.8 Regulation respecting the traceability of excavated contaminated soil (RCTSCE) R.L.R.Q. chapter Q-2, r. 47.01

1.6 QUALITY ASSURANCE

.1 Regulatory Requirements: Unless otherwise provided, the Contractor shall obtain, upon payment of all related fees, the permits, licenses, certificates, and approvals required by the regulations and Contract Documents, in accordance with the Terms and Conditions of Contract and the following:

.1 The regulatory requirements and fees payable on the date of submission, and

.2 Any change in regulatory requirements or fees that will come into effect after the date of receipt of submissions for which notification has been given prior to the date of receipt of submissions.

Part 2 Products

2.1 NOT USED.

.1 Not Used.

2.2 EASEMENTS AND NOTICES

.1 The owner will obtain all easements and permanent rights required for servitude that may be required for performance the Work.

.2 The Entrepreneur will provide all notifications required by regulatory requirements.

Part 3 Execution

3.1 NOT USED.

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All sections of the specifications.

1.2 REFERENCE STANDARDS

.1 NACE International

.1 NACE International

.1 ANSI/NACE No. 13/SSPC-ACS-1-2016 -SG, Industrial Coating and Lining Application Specialist Qualification and Certification

.2 Soil and Aggregate Quality Control Guide (2019); Road Project Management Branch; Ministry of Transport (MTQ).

.3 Concrete Quality Control Guide (2019); Road Project Management Branch; Ministry of Transport (MTQ).

1.3 INSPECTION

.1 The Departmental Representative must have access to the works. If part of the work or works is carried out outside the site, access to that place must also be ensured for the duration of the work.

.2 If works are required for special inspections, approvals or tests ordered by the Departmental Representative or required under local regulations for the project, make a request within a reasonable time.

.3 If the Contractor has covered or permitted to cover a work before it has been subjected to the required inspections, approvals or special tests, the Contractor must discover the work in question, see to the performance of the inspections or tests required to the satisfaction of the competent authorities, and then return the work to its original condition.

.4 The Departmental Representative may order the inspection of any part of the work whose conformity with the Contractual Documents is questioned. If, after examination, the work in question is found to be non-compliant with the requirements of the Contractual Documents, the Contractor must take the necessary measures to bring the work into conformity with the specified requirements, and assume the costs of inspection and repair. If the work in question is declared to comply with the requirements of the Contractual Documents, the Departmental Representative will assume the costs of inspection and restoration thus incurred.

1.4 INDEPENDENT TESTING AND INSPECTION BODIES

.1 The Ministry Representative will be responsible for retaining the services of independent testing and inspection bodies. The cost of these services will be borne by the Departmental Representative.

.2 Provide the equipment required by the designated bodies for the conduct of tests and inspections.

.3 The use of testing and inspection organizations does not in any way relieve the Contractor of its responsibility for the performance of the work in accordance with the requirements of the Contractual Documents.

.4 If defects are found during the tests and/or inspections, the designated body will require further inspection and/or additional testing to accurately define the nature and extent of these defects. The Contractor shall correct defects and imperfections as directed by the Ministry Representative, at no additional cost to the Ministry Representative, and shall bear the cost of the tests and inspections to be carried out after such corrections.

1.5 ACCESS TO THE CONSTRUCTION SITE

.1 Allow testing and inspection organizations to have access to the site as well as to the manufacturing and shaping workshops located outside the site.

.2 Work with these organizations and take all reasonable steps to ensure that they have the appropriate means of access.

1.6 PROCEDURE

.1 Notify the appropriate agency and the Departmental Representative in advance when testing is required so that all parties involved can be present.

.2 Submit the samples and/or materials/materials necessary for testing according to the requirements of the quotation, within a reasonable time and in a predetermined order so as not to delay the execution of the work.

.3 Provide the necessary manpower and facilities to collect and handle samples and materials/materials on site. Also provide the space required for the storage and curing of samples.

1.7 CERTIFICATION

.1 Where certification is required in the plans and specifications, the Entrepreneur must provide a copy of the certificate to the Departmental Representative before the start of the work subject to this requirement. The certificate must be valid for the duration of this work.

1.8 CERTIFICATE OF CONFORMITY

.1 When a certificate of conformity is required under the plans and specifications, the Entrepreneur may not use a material for which such a certificate has not been sent to the Departmental Representative.

.2 This certificate of conformity must be signed by the Manufacturer the material. The certificate of conformity and the receipts for the delivery of the materials must be drawn up in such a way as to be able to make the link between them. The Entrepreneur must submit the certificate of conformity to the Departmental Representative within the prescribed time.

.3 If the Entrepreneur is unable to provide all the information required by the plans and specifications, he must, at his own expense, use a registered laboratory to provide the missing

information on the certificate of conformity. The certificate of conformity must then be signed by the representative of the laboratory that carried out the tests.

1.9 QUALIFICATION

.1 Where a qualification is required in the plans and specifications, the Entrepreneur must submit a copy of the certificate to the Departmental Representative before the start of the work subject to this requirement. The certificate must remain valid for the duration of this work.

1.10 REJECTED WORKS OR WORKS

.1 Remove defective elements deemed not to comply with the Contractual Documents and rejected by the Departmental Representative, either because they have not been executed according to the rules of the art, or because they have been made with defective materials or products, even if they have already been integrated into the work. Replace or redo the elements in question according to the requirements of the Contractual Documents.

.2 If necessary, repair without delay the works of other contractors that have been damaged during the above-mentioned repair or replacement work.

.3 If, in the opinion of the Departmental Representative, it is not appropriate to repair the defective works or deemed not to comply with the Contractual Documents, the Contracting Authority will deduct from the contractual price the difference in value between the work performed and that prescribed in the Contractual Documents, the amount of this difference being determined by the Departmental Representative.

1.11 COMMERCE

.1 Provide a copy (electronic format) of the test reports and to the Departmental Representative.

.2 Provide copies of these reports to the subcontractors responsible for the inspected or tested works and to the manufacturer or fabricator of the inspected or tested materials.

1.12 TESTS AND DOSAGE FORMULAS

.1 Provide the required test reports and dosing formulas.

.2 The cost of tests and dosing formulas that have not been specifically required under the Contractual Documents or local regulations for the site will be subject to the approval of the Departmental Representative and may subsequently be reimbursed.

1.13 SAMPLES OF WORKS

.1 Prepare the samples of works specifically required in the quote. The requirements of this section apply to all sections of the specification in which samples of works are requested.

.2 Construct the samples of works at the various locations approved by the Departmental Representative designated in the section concerned.

.3 Prepare sample works for approval by the Departmental Representative within a reasonable time and in a predetermined order, so as not to delay the completion of the work.

.4 A delay in the preparation of samples of works cannot constitute a sufficient reason to obtain an extension of the time limit for carrying out the work and no request to this effect will be accepted.

.5 If necessary, the Departmental Representative will assist the Contractor in establishing a schedule for the preparation of sample works.

.6 Remove samples of works at the end of the work or at the time determined by the Departmental Representative.

.7 Samples of works may be part of the finished work.

.8 It is specified, in each section of the estimate where samples of works are mentioned, whether they can be part of the finished work, or not, and when they must be removed, if any.

1.14 FACTORY TESTING

.1 Submit certificates of factory testing that are required in the different sections of the quote.

Part 2 Products

2.1 NOT USED.

.1 Not Used.

Part 3 Execution

3.1 NOT USED.

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All sections from the specifications.

1.2 REFERENCE STANDARDS

.1 Groupe CSA (CSA)

.1 CSA-A23.1/A23.2-F19, Concrete - Constituents and Work Execution/Standard Concrete Testing and Practices.

.2 Public Works and Government Services Canada (PWGSC), Guide to Standard Procurement Clauses and Conditions (SACC) - ID: R0202D, Title: Terms and Conditions "C", effective May 14, 2004.

.3 United States Environmental Protection Agency (EPA) / Office of Water

.1 EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit the required documents and samples in accordance with section 01 33 00 - Documents and samples to be submitted.

1.4 INSTALLATION AND REMOVAL

.1 Prepare a site plan indicating the proposed location and dimensions of the area to be fenced and used by the Contractor, the number of construction trailers required, access routes to the fenced area and fence installation details.

.2 Indicate the areas that need to be paved with gravel to prevent sludge deposits.

.3 Indicate any additional areas or transit zones.

.4 Provide, set up or arrange the site facilities necessary to allow the execution of the work as soon as possible.

.5 Disassemble the equipment and evacuate it from the site when it is no longer needed.

1.5 LIFTING EQUIPMENT

.1 Supply, install, maintain and operate the winches and cranes necessary for the movement of workers, materials/materials and equipment. Make the necessary financial arrangements with subcontractors for the use of lifting equipment.

.2 The operation of winches and cranes must be entrusted to skilled workers.

1.6 SITE STORAGE/LOADING

.1 Ensure that the work is carried out within the limits indicated in the Contractual Documents. Do not unreasonably clutter the premises with materials and materials.

.2 Do not overload or overload any part of the work so as not to compromise its integrity.

1.7 CONSTRUCTION PARKING

.1 It will be allowed to park on the site, if it does not hinder the execution of the work.

.2 Develop suitable access routes to the site and ensure its maintenance.

1.8 SECURITY

.1 Hire reliable security personnel to supervise and pay for the site and materials/materials on the site after working hours and during days off.

1.9 OFFICES

.1 No site office is required for the needs of the Departmental Representative.

.2 If necessary, a room may be made available to the interveners in order to hold site meetings in person. This space will be located in the facilities of the NWA of Cap-Tourmente.

.3 Provide a complete and identified first aid kit and store it in an easily accessible location.

1.10 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.

1.11 SANITATION

.1 Provide sanitary facilities for workers in accordance with relevant ordinances and regulations.

.2 Post required notices and take all precautions required by local health authorities. Keep the premises and area clean.

.3 Once permanent connections to the water supply and sewage disposal systems have been completed, temporary enclosures will be installed inside the building where toilets and urinals will be installed. Permanent sanitary facilities may be used with the approval of the Departmental Representative.

.4 Provide sanitary facilities for the Site user with water and a weekly maintenance.

.1 Four (4) toilets for the workshop (Administrative Centrer) from November 1st 2022 to minimally December 1st 2022.

.2 Two (2) toilets for the interpretation center from November 1st 2022 to minimally December 1st 2022.

1.12 SITE SIGNAGE

.1 Apart from warning signs, no other signs or posters can be installed on the construction site.

.2 Inscriptions on instruction signs and safety advisories must be written in both official languages. Graphical symbols must comply with CAN/CSA-Z321.

.3 Keep approved signs and notices in good condition for the duration of the work and evacuate them from the site once they are completed, or before if requested by the Departmental Representative.

1.13 PROTECTION AND MAINTENANCE OF TRAFFIC

.1 If necessary, provide access roads and temporary detour lanes to maintain traffic.

.2 Maintain and protect traffic on the affected roads during construction work, unless specifically specified otherwise by the Departmental Representative.

.3 Provide for the protection and diversion of traffic, including the services of supervisors and flaggers, the installation of barricades, the installation of lighting devices around and in front of equipment and the work area, the installation and maintenance of warning signs, danger signs and appropriate direction signs.

.4 Protect the travelling public from damage to people and property.

.5 The Contractor's rolling stock used to transport materials/materials entering or leaving the site must cause the least possible interference with road traffic.

.6 Ensure that existing lanes and permitted load limits on them are adequate. The Contractor is required to repair tracks damaged because of the construction work.

.7 Build the necessary access roads and construction tracks.

.8 Develop construction tracks with an adequate slope and width; avoid steep curves, blind turns, and dangerous intersections.

.9 Provide lighting fixtures, traffic signs, barricades, and distinctive markings necessary for safe traffic.

.10 Take the necessary measures to remove dust to always ensure the safe conduct of activities.

.11 The location, slope, width and alignment of access roads and construction tracks are subject to the approval of the Departmental Representative.

.12 Lighting fixtures must provide full visibility over the entire width of construction runways and work areas during evening and night shifts.

.13 Provide for snow removal during the work period.

.14 Once the work is complete, dismantle the construction tracks designated by the Departmental Representative.

1.14 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 Implement temporary means to control erosion and sediment deposition to prevent soil loss that may result from stormwater runoff or wind erosion, and the training of this soil on adjacent pedestrian properties and pathways. These means must comply 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 control equipment at the appropriate time and rehabilitate and stabilize surfaces stirred during this work.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All sections of the specifications.

1.2 INSTALLATION AND REMOVAL

.1 Provide, install, or arrange the temporary access and protection works necessary to allow the work to be carried out as soon as possible.

.2 Disassemble the equipment and evacuate it from the site when it is no longer needed.

1.3 GUARDRAILS AND BARRIERS

.1 Provide rigid and safe guardrails and barriers and install them around deep excavations.

1.4 ACCESS ROADS TO THE CONSTRUCTION SITE

.1 Develop the tracks, paths, ramps, and pedestrian crossings necessary to access the site.

1.5 ACCESS ROADS FOR EMERGENCY VEHICLES

.1 Ensure access to the site for emergency vehicles and provide sufficient height clearances.

1.6 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

.1 Protect nearby public and private property against any damage that may result from the execution of the work.

.2 If applicable, assume full responsibility for the damage caused.

1.7 WASTE MANAGEMENT AND DISPOSAL

.1 Sort waste for reuse/re-use and recycling.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All sections of the specifications.

1.2 REFERENCE STANDARDS

.1 References to relevant standards can be made in each section of the quote.

.2 In cases where there is still doubt as to the conformity of certain products or systems with the relevant standards, the Departmental Representative reserves the right to verify it by testing.

.3 If the products or systems comply with the Contractual Documents, the costs incurred by these tests will be borne by the Departmental Representative, otherwise they must be borne by the Contractor.

1.3 QUALITY

.1 The products, materials, materials, appliances and parts used for the execution of the work must be new, in perfect condition and of the best quality for the purposes for which they are intended. If necessary, provide evidence establishing the nature, origin and quality of the products supplied.

.2 The purchasing policy aims to acquire, at a minimum cost, items containing the largest possible percentage of recycled and recovered materials, while maintaining satisfactory levels of competitiveness. Make reasonable efforts to use recycled materials/materials for both the completion of the works and the execution of the work.

.3 Products found defective before the completion of the work will be refused, regardless of the conclusions of previous inspections. Inspections are not intended to relieve the Contractor of its responsibilities, but simply to reduce the risk of omission or error. The Entrepreneur shall ensure the removal and replacement of defective products at its own expense and shall be responsible for any delays and costs arising therefrom.

.4 In the event of a dispute as to the quality or suitability of the products, only the Departmental Representative may decide the matter based on the requirements of the Contractual Documents.

.5 Unless otherwise specified in the specification, promote consistency by ensuring that materials or elements of the same type come from the same manufacturer.

.6 Labels, trademarks, and permanent nameplates prominently displayed on the products used are not acceptable unless they give an operating instruction or are placed on equipment installed in premises of mechanical or electrical installations.

1.4 AVAILABILITY

.1 Immediately after signing the contract, be aware of the requirements relating to the delivery of the products and anticipate any delays. If delays in the delivery of products are foreseeable, notify the

Departmental Representative so that measures can be taken to replace them or to make the necessary corrections, sufficiently in advance so as not to delay the work.

.2 If the Departmental Representative has not been notified of the foreseeable delays in delivery at the beginning of the work, and if it seems likely that the execution of the work will be delayed, the Departmental Representative reserves the right to substitute for the planned products other comparable products that can be delivered more quickly, without increasing the Contract Price or Contact Time.

1.5 STORAGE, HANDLING AND PROTECTION

.1 Handle and store products without damaging, altering, or soiling them, and following the manufacturer's instructions, if applicable.

.2 Store grouped or batch products in their original packaging; leave the packaging, label, and manufacturer's seal intact. Do not unpack or untie products before incorporating them into the work.

.3 Products that may be damaged by the weather must be kept under a weatherproof enclosure.

.4 Hydraulic binders should not be placed directly on the floor or on a concrete floor, nor be in contact with the walls.

.5 Sand intended to be incorporated into mortars and grouts must remain dry and clean. Store it on wooden platforms and cover it with waterproof tarpaulins in bad weather.

.6 Place timber as well as sheet and panel materials on rigid, flat supports so that they do not rest directly on the ground. Give a low slope to promote the flow of condensation water.

.7 Store and mix paint products in a heated and well-ventilated room. Every day, remove oily rags and other flammable waste from the workplace. Take all necessary precautions to avoid the risk of spontaneous combustion.

.8 Replace damaged products at no additional cost, to the satisfaction of the Ministry Representative.

.9 Retouch to the satisfaction of the Departmental Representative the finished surfaces in the factory that have been damaged. Use, for retouching, products identical to those used for the original finish. It is forbidden to apply a finishing or retouching product on the nameplates.

1.6 TRANSPORTATION

.1 Pay the transport costs of the products required for the execution of the work.

.2 The transport costs of the products provided by the Client will be borne by the Departmental Representative. Ensure the unloading, handling and storage of these products.

1.7 MANUFACTURER'S INSTRUCTIONS

.1 Unless otherwise specified in the quote, install or install the products according to the manufacturer's instructions. Do not rely on the indications on the labels and containers provided with the products. Obtain a copy of the manufacturer's written instructions directly.

.2 Notify the Ministry Representative in writing of any discrepancies between the requirements of the specification and the manufacturer's instructions, so that he can take appropriate action.

.3 If the manufacturer's instructions have not been followed, the Ministry Representative may require, without increasing the contract price, the removal and resting of products that have been improperly installed or installed.

1.8 QUALITY OF WORK

.1 The implementation must be of the best possible quality, and the work must be carried out by tradespeople, qualified in their respective disciplines. Notify the Departmental Representative if the work to be performed is such that it is unlikely to achieve the expected results.

.2 Do not hire persons who are unqualified or do not have the necessary arrangements to carry out the work entrusted to them. The Departmental Representative reserves the right to prohibit access to the site by any person deemed incompetent or negligent.

.3 Only the Departmental Representative can settle disputes concerning the quality of execution of the work and the skills of the workforce, and his decision is irrevocable.

1.9 CO-ORDINATION

.1 Ensure that the workers collaborate with each other in the realization of the work. Exercise close and constant supervision of their work.

.2 It is the Contractor's responsibility to ensure the coordination of the work and the installation of crossings, sleeves, and accessories.

1.10 CONCEALMENT

.1 Unless otherwise noted, conceal pipes, conduits and electrical cables in floors, walls and ceilings of rooms and finished areas.

.2 Before concealing any material, inform the Departmental Representative of any abnormal situation. Do the installation according to the instructions of the Departmental Representative.

1.11 REMEDIAL WORK

.1 Perform remedial work required to repair or replace parts or elements of the work found to be defective or unacceptable. Co-ordinate the work to be carried out on the affected contiguous structures, as required.

.2 Rehabilitation work must be carried out by specialists familiar with the materials and materials used; the work must be carried out in such a way that no part of the work is damaged or is likely to be damaged.

1.12 LOCATION OF FIXTURES

.1 The location indicated for appliances, power outlets and other electrical or mechanical equipment should be considered approximate.

.2 Inform the Ministry Representative of any problems that may be caused by the choice of the location of a device and proceed with the installation according to his instructions.

1.13 FASTENINGS - EQUIPMENT

.1 Unless otherwise specified, provide metal accessories and fasteners with the same texture, colour and finish as the element to be secured.

.2 Avoid any electrolytic action between metals or materials of a different nature.

.3 Unless stainless steel or other fasteners are prescribed in the relevant section of the specification, use corrosion-proof fasteners and anchorages of hot-dip galvanized steel to subject the outer structures.

.4 It is important to determine the spacing of anchorages considering limit loads and shear strength in order to ensure permanent free anchorage. Dowels made of wood, or any other organic matter are not accepted.

.5 Use as few visible fasteners as possible; space them evenly and place them carefully.

.6 Fasteners that could cause the crumbling or cracking of the element in which they are anchored will be refused.

1.14 FASTENERS - MATERIALS

.1 Use fasteners of standard commercial shapes and dimensions, made of suitable material, with a finish suitable for the intended use.

.2 Unless otherwise stated, use sturdy fasteners, of semi-fine quality, with hexagonal head. Use stainless steel parts of grade 304 in the case of outdoor installations.

.3 The bolt rods must not exceed the top of the nuts by a length greater than their diameter.

.4 Use regular washers on devices and equipment and sheet metal lock washers with soft trim where there are vibrations. To secure appliances and materials on stainless steel elements, use resilient washers.

1.15 PROTECTION OF WORK IN PROGRESS

.1 Do not overload any part of the building. Unless otherwise specified, obtain written authorization from the Ministry Representative before cutting, drilling, or passing a sleeve through a frame element.

1.16 EXISTING UTILITY

.1 When it comes to making connections to existing networks, carry them out at times set by the competent local authorities with as little hindrance as possible to the progress of the works and the traffic of pedestrians and vehicles.

.2 Protect, move, or maintain utility pipes that are functional. If pipes are discovered during the work, close them in a manner approved by the responsible authorities, identify the filling points and record them.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All sections of the specifications.

1.2 REFERENCE STANDARDS

.1 Surveys must be conducted with the georeferenced NAD83-(NSRS) FRENCH: NAD83 (SCRS)."

1.3 QUALIFICATIONS OF SURVEYOR

.1 Qualified and licensed surveyor, authorized to practice at the place where the site is located and deemed acceptable by the Departmental Representative.

1.4 LANDMARKS

.1 The main existing vertical and horizontal control points are indicated on the drawings.

.2 Before undertaking field work, identify and confirm the location of checkpoints and ensure their protection. Preserve permanent landmarks throughout the construction period.

.3 Do not make changes or move markers without first informing the Departmental Representative in writing.

.4 If a landmark is lost or destroyed, or if it needs to be moved due to changes in levels or locations, notify the Departmental Representative.

.5 Ask the surveyor to relocate the checkpoints in accordance with the original survey plan.

1.5 SURVEYING REQUIREMENTS

.1 Establish two (2) permanent leveling benchmarks in the field, based on the benchmarks already established based on checkpoints. Record their location by entering their horizontal and vertical coordinates in the project file documents.

.2 Before the start of the work, the contractor must carry out a survey of the existing one to guarantee the reliability of the surveys to be carried out during construction.

.3 Establish lines and levels, then determine locations using survey instruments.

.4 Mark the site for leveling work, the installation of backfill materials and landscaping work.

.5 Stake the talus.

.6 Set the radiate dimensions of the pipes.

.7 The Contractor's surveyor must be always present at the site during the civil work to ensure that the hydraulic profile is respected.

1.6 EXISTING SERVICES

.1 Before the start of the work, define the extent and location of the utility pipes in the work area and inform the Departmental Representative of fundings.

.2 Remove abandoned utility pipes that are within 2 m of the structures. Seal or otherwise seal or seal the ends of the pipes left in place, as directed by the Departmental Representative,

1.7 LOCATION EQUIPMENT AND FIXTURES

.1 The location indicated or prescribed for equipment, appliances and utility connection points should be considered approximate.

.2 The location of equipment, appliances and distribution networks must be determined in such a way as to create as little obstruction as possible and to free up as much useful space as possible, in accordance with manufacturers' recommendations for access, maintenance and security.

.3 Inform the Departmental Representative of the installation work that will soon be carried out and submit for his approval the planned location for these various elements.

.4 Submit layout drawings specifying the location of the various networks and devices, in relation to each other, at the time indicated by the Departmental Representative.

1.8 RECORDS

.1 Maintain a detailed and accurate record of surveying and audit work as it progresses.

.2 Once the major land development work is completed, prepare a certified topographic survey showing the dimensions, location, angles, and level dimensions of the structures.

.3 Record the location of all utility pipes, whether they have been moved or decommissioned, or have remained intact.

1.9 ACTION AND INFORMANTIONAL SUBMITTALS

.1 Send the name and address of the surveyor to the Departmental Representative.

.2 At the request of the Departmental Representative, submit the documents and samples necessary to verify the accuracy of the geotechnical studies.

.3 Submit a certificate signed by the surveyor recording and confirming the locations and level ratings of the completed works, which conform to both conform and non-conform to the Contractual Documents.

.4 Provide a DWG (TQC) format plan showing ratings and levels of new pipes, accessories, service connections, utility ducts and others.

1.10 SUBSURFACE CONDITIONS

.1 Notify the Departmental Representative without delay and in writing, if the physical characteristics of the basement, at the location of the site, differ significantly from those indicated in the Contractual Documents or if there are good reasons to believe that such a difference exists.

.2 After a quick investigation, if the Departmental Representative determines that the physical characteristics of the subsoil do differ from the conditions indicated or planned, instructions will be given for the review of the work to be carried out under the terms of the modification orders transmitted.

Part 2 Products

2.1 NOT USED.

.1 Not Used.

Part 3 Execution

3.1 NOT USED.

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All sections of the specifications.

1.2 PROJECT CLEANLINESS

.1 Keep the site clean and free from any accumulation of debris and scrap materials other than those generated by the Client or other contractors.

.2 Evacuate debris and scrap materials off the job site daily, at predetermined times, or dispose of them as directed by the Departmental Representative. Waste materials must not be burned on the site unless this method of disposal is authorized by the Departmental Representative.

.3 Keep access roads to the building free of ice and snow. Pile up/stack snow in designated areas only.

.4 Make the necessary arrangements and obtain permits from the competent authorities for the disposal of debris and scrap materials.

.5 Provide, on the site, containers, according to the needs of the Contractor, for the evacuation of debris and waste materials.

.6 Provide and use separate and identified containers for recycling.

.7 Remove debris and scrap materials off the job site.

.8 Clean interior surfaces before finishing work begins and keep these areas free of dust and other impurities during the work.

.9 Store volatile waste in closed metal containers and dispose of it off the job site at the end of each work period.

.10 Ensure good ventilation of the premises during the use of volatile or toxic substances. However, it is forbidden to use the building's ventilation system for this purpose.

.11 Use only the cleaning products recommended by the manufacturer of the surface to be cleaned and use them according to the recommendations of the manufacturer of the products in question.

.12 Establish the cleaning schedule so that dust, debris, and other raised dirt do not fall back on freshly painted wet surfaces and contaminate building systems.

1.3 FINAL CLEANING

.1 Upon substantial completion of the work, remove surplus materials, tools, and construction equipment and materials that are no longer required to carry out the rest of the work.

.2 Remove debris and scrap materials, except those generated by other contractors, and leave the premises clean and ready to occupy.

.3 Before the final inspection, remove excess materials, tools, equipment, and construction materials.

.4 Remove debris and scrap materials other than those generated by the Owner or other contractors.

.5 Dispose of waste materials off the job site at predetermined times or dispose of them as directed by the Departmental Representative. Waste materials must not be burned on the site unless this method of disposal is authorized by the Departmental Representative.

.6 Make the necessary arrangements and obtain permits from the competent authorities for the disposal of debris and scrap materials.

.7 Review finishes, accessories, and materials to ensure that they meet prescribed requirements for operation and quality of workmanship.

.8 Sweep and clean sidewalks, steps, and other outdoor surfaces; sweep or rake the rest of the field.

.9 Remove dirt and other elements that disturb the exterior surfaces.

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Sort waste for reuse/re-use and recycling.

Part 2 Products

2.1 NOT USED.

.1 Not Used.

Part 3 Execution

3.1 NOT APPLICABLE

.1 Not applicable.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All sections of the specifications.

1.2 ADMINISTRATIVE REQUIREMENTS

.1 Procedure for acceptance of works

.1 Inspection performed by the Contractor: The Contractor must inspect the work, identify defects and failures, and make the necessary repairs to ensure that everything complies with the requirements of the Contractual Documents.

.1 Notify the Departmental Representative in writing once the Contractor's inspection has been completed and submit a document attesting that the corrections have been made.

.2 Then submit a request for the work to be inspected by the Departmental Representative.

.2 Inspection carried out by the Departmental Representative

.1 The Departmental Representative will carry out an inspection of the work with the Contractor to identify defects and failures.

.2 The Entrepreneur must make the requested corrections.

.3 Completion of tasks: submit a document written in French certifying that the tasks indicated below have been completed.

.1 The work has been completed and has been inspected and found to comply with the requirements of the Contractual Documents.

.2 Deficiencies and defects identified during inspections have been corrected.

.3 The devices, equipment and systems have been tested and are fully operational.

.4 The necessary training in the operation of the apparatus, equipment and systems has been given to the Owner's staff.

.5 The commissioning of the equipment, equipment and mechanical systems was carried out in accordance with the requirements of section 44 01 00 - Equipment, and a copy of the final commissioning report was submitted to the Departmental Representative

.6 The work is completed and ready for final inspection.

.4 Final inspection.

.1 When all the above tasks have been completed, submit a request for the work to be subject to final inspection, which will be carried out jointly by the Departmental Representative and the Contractor.

.2 If the work is deemed incomplete by the Client and the Departmental Representative, complete the elements that have not been carried out and submit a new request for inspection.

.5 Declaration of Substantial Completion: Where the Departmental Representative considers that deficiencies and defects have been corrected and that the contractual requirements

appear to be largely met, submit a request to produce a certificate of substantial completion.

.6 Beginning of the warranty period and the period of exercise of the right of retention: The date of acceptance by the Client of the declaration of substantial completion of the works submitted will be the date of the beginning of the period of exercise of the right of retention and the guarantee period, unless otherwise prescribed by the regulations relating to the right of retention in force at the place of the works.

.7 Final payment

.1 When the Departmental Representative considers that the deficiencies and defects have been corrected and that the contractual requirements are fully met, submit a request for final payment.

.2 If the work is deemed incomplete by the Departmental Representative, complete the items that have not been completed and submit a new request for inspection.

.8 Payment of the holdback: After the issuance of the certificate of substantial completion of the work, submit a request for payment of the deduction in accordance with the provisions of the contractual agreement.

1.3 FINAL CLEANING

.1 Perform cleaning work in accordance with section 01 74 00 - Cleaning.

.1 Evacuate surplus materials/materials, waste, tools, and equipment from the construction site.

.2 Waste management: sorting waste for reuse/re-use and recycling.

Part 2 Products

2.1 NOT USED.

.1 Not Used.

Part 3 Execution

3.1 NOT USED.

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All sections of the specifications.

1.2 ADMINISTRATIVE PROCEDURES

.1 Meeting on safeguards, prior to the completion of the work

.1 One (1) week prior to completion, hold a meeting with the Contractor's representative and the Departmental Representative, in accordance with section 01 31 19 - Project Meetings, during which the following will be reviewed:

.1 the requirements of the work;

.2 the manufacturer's instructions for installation and the terms of the manufacturer's warranty.

.2 The Departmental Representative will establish the communication procedure to be followed in the cases indicated below.

.1 Notice of defect for elements, materials or systems covered by a warranty.

.2 Prioritization of defect types.

.3 Determination of a reasonable response time.

.3 Provide the name, address and telephone number of the bonded company performing the warranty troubleshooting/repairs.

.4 Ensure that the company's offices are in the local service area of the guaranteed item/work, that contacts are always available, and that they can respond to inquiries regarding troubleshooting/warranty repairs.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit the required documents and samples in accordance with section 01 33 00 - Documents and samples to be submitted.

.2 Two (2) weeks before the substantial completion of the work, submit to the Departmental Representative four (4) final copies of the operations and maintenance manuals in French.

.3 Replacement materials and materials, special tools and spare parts supplied must be of the same quality of workmanship as the products used to carry out the work.

.4 Upon request, provide documentation confirming the type, source of supply and quality of the products supplied.

1.4 FORMAT

.1 Present the data in the form of an instruction manual.

.2 Provide a manual in digital form (pdf) via file sharing software.

.3 Organize the content in logical order of the operations, according to the numbers of the sections of the quote and the order in which they appear in the table of contents.

.4 Provide, for each product and each system, an electronic bookmark on which the description of the product must be written.

.5 The text must consist of printed data provided by the manufacturer or typed data.

.6 Provide CAD files at 1:1 scale, in dwg format, via sharing software.

1.5 CONTENT – PROJECT RECORD DOCUMENTS

.1 Table of contents for each volume: indicate the designation of the project;

- .1 the date of filing of documents;
- .2 the name, address and telephone number of the Consultant and the Entrepreneur and the names of their representatives;
- .3 a list of products and systems, indexed according to the contents of the volume.

.2 For each product or system, indicate the following:

- .1 the name, address and telephone number of subcontractors and suppliers, as well as local distributors of equipment and spare parts.

.3 Data sheets: mark each sheet in such a way as to clearly identify the specific products and parts as well as the data relating to the installation; delete all irrelevant information.

.4 Drawings: drawings are used to complete the data sheets and to illustrate the relationship between the different elements of the equipment and systems; they include the control and principal schemes.

.5 Typed text: as needed, to complete the data sheets.

- .1 Give instructions in a logical order for each intervention, incorporating the manufacturer's instructions prescribed in section 01 45 00 - Quality Control.

.6 Training: refer to section 01 79 00 - Demonstration and training.

1.6 AS-BUILT DOCUMENTS AND SAMPLES

.1 In addition to the documents mentioned in the General Terms and Conditions, a copy or set of the following documents is kept on the site for the Departmental Representative:

- .1 contractual drawings;
- .2 quote;
- .3 addenda;
- .4 change orders and other amendments to the contract;
- .5 revised shop drawings, data sheets and samples;
- .6 records of on-site testing;
- .7 inspection certificates;
- .8 certificates issued by manufacturers.

.2 Store documents and samples from the project file in the site office, separately from the work execution documents.

.1 Provide filing cabinets and shelves as well as a safe storage area.

.3 Label the documents and classify them according to the list of section numbers indicated in the table of contents of the specifications.

.1 Clearly write "Project File", in block letters, on the label of each document.

.4 Keep project file documents clean, dry and legible.

.1 Do not use them as work execution documents.

.5 The Departmental Representative must have access to the documents and samples in the project file for inspection.

1.7 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

.1 Record the information directly in the CAD file (dwg).

.2 Record information as the work progresses.

.1 Do not conceal works until the required information has been recorded.

.3 Contract drawings and shop drawings: indicate each piece of data in such a way as to show the works as they are, including the following.

.1 The measured depth of the foundation elements relative to the level of the first finished floor.

.2 The location, measured in the horizontal and vertical planes, of utility pipes and underground accessories in relation to permanent surface developments.

.3 The location of utility pipes and interior fittings, measured in relation to visible and accessible building elements.

.4 On-site changes to the dimensions and details of the structures.

.5 Changes made because of change orders.

.6 Details that are not included in the original Contractual Documents.

.7 Reference standards for shop drawings and related modifications.

.4 Specification: Enter each data to describe the works as they are, including the following.

.1 The name of the manufacturer, the trademark and the catalogue number of each product installed, and optional and replacement elements.

.2 Changes that are subject to addenda or change orders.

.5 Other documents: keep manufacturers' certificates, inspection certificates and records of on-site testing prescribed in each of the technical sections of the specification.

.6 If applicable, provide the digital photos to be included in the project file.

1.8 FINAL SURVEY

.1 Submit the final survey certificate in accordance with section 01 71 00 - Review and Preparation, attesting to compliance or non-compliance with the requirements of the Contractual Documents of the site and level ratings of the completed works.

1.9 EQUIPMENT AND SYSTEMS

.1 For each piece of material and for each system, give a description of the whole and its constituent parts.

.1 Indicate its function, normal operating characteristics, and stresses.

.2 Indicate the characteristic curves, together with technical data and test results; also give the complete list and the trade number of parts that can be replaced.

.2 Provide lists of supply circuits (distribution panels), with indication of electrical characteristics, control circuits and telecommunications circuits.

.3 Include installed color-coded wiring diagrams.

.4 Methods of operation: indicate the instructions and sequences for start-up, running-in and normal operation, as well as the following instructions:

.1 instructions for regulation, control, shutdown, decommissioning and emergency instructions.

.2 summer and winter operating instructions and any other special instruction.

.5 Maintenance: Provide instructions for routine maintenance and fault finding, as well as instructions for disassembling, repairing, and reassembling, aligning, adjusting, balancing, and checking elements and networks.

.6 Provide maintenance and lubrication schedules and a list of lubricants required.

.7 Provide written instructions from the manufacturer regarding the operation and maintenance of the components.

.8 Provide descriptions of the sequence of operations prepared by the various manufacturers of control devices and devices.

.9 Provide the original manufacturer's parts list as well as illustrations, drawings, and assembly diagrams necessary for maintenance.

.10 Provide control diagrams of the installed control/control devices, prepared by the various manufacturers.

.11 Provide the Contractor's coordination drawings as well as chromocoded diagrams of the installed piping.

.12 Provide a list of the valve labelling numbers, indicating the location and function of each appliance, and reference to the control and control diagrams.

.13 Provide a list of spare parts from the original manufacturer with current prices and recommended quantities to keep in stock.

.14 Provide the test and balancing reports prescribed in sections 01 45 00 - Quality Control.

.15 Additional requirements: according to the requirements of the various technical sections of the quote.

1.10 MAINTENANCE MATERIALS

.1 Spare parts

.1 Provide spare parts according to the quantities prescribed in the different technical sections of the quote.

.2 The spare parts supplied must come from the same manufacturer and be of the same quality as the elements incorporated into the work.

.3 Deliver and store spare parts at the construction site.

.4 Receive and list all parts.

.1 Submit the inventory list to the Departmental Representative.

.2 Insert the approved list in the maintenance manual.

.5 Keep a receipt of all delivered parts and submit it before final payment.

.2 Materials/Replacement Materials

.1 Provide materials and replacement materials according to the quantities indicated in the different technical sections of the quote.

.2 Replacement materials and materials must come from the same manufacturer and be of the same quality as the materials and materials incorporated into the work.

.3 Deliver and store replacement materials/materials on site.

.4 Receive and list replacement materials and materials.

.1 Submit the inventory list to the Departmental Representative.

.2 Insert the approved list in the maintenance manual.

.5 Keep a receipt for all materials and materials delivered and submit it before final payment.

.3 Special tools

.1 Provide special tools according to the quantities prescribed in the different technical sections of the quote.

.2 Tools must bear a label indicating their function and the materials for which they are intended.

.3 Deliver and store special tools on site.

.4 Receive and list special tools.

.1 Submit the inventory list to the Departmental Representative.

.2 Insert the approved list in the maintenance manual.

1.11 DELIVERY, STORAGE, AND HANDLING

.1 Store spare parts, replacement materials and materials as well as special tools to prevent damage or deterioration.

.2 Store spare parts, replacement materials and materials, and special tools in their original packaging kept in good condition and bearing the manufacturer's seal and label intact.

.3 Store items that may be damaged by the weather in weatherproof enclosures.

.4 Store products that may freeze in a heated and ventilated room.

.5 Evacuate damaged or deteriorated items or products, replace them with new ones at no additional cost, and submit them to the Departmental Representative for review.

1.12 WARRANTIES AND BONDS

.1 Develop a warranty management plan that includes all warranty information.

.2 Thirty (30) days prior to the pre-completion guarantee meeting, submit the management plan to the Departmental Representative for approval.

.3 The guaranteed management plan must set out the actions and documents that will ensure that the Departmental Representative can benefit from the guarantees provided for in the contract.

.4 The plan must be presented in narrative form, and it must contain sufficient detail to be later used and understood by maintenance and repair personnel.

.5 Submit to the Departmental Representative, for approval prior to the submission of each monthly payment estimate, information regarding the warranties obtained during the construction phase.

.6 Record all the information in a binding to be given at the time of receipt of the work. Comply with the following requirements.

- .1 Separate each guarantee and bond by means of tab sheets identified according to the contents of the table of contents.
- .2 Make a list of subcontractors, suppliers, and manufacturers, with the name, address and telephone number of each person's designated manager.
- .3 Obtain warranties and bonds signed in duplicate by subcontractors, suppliers and manufacturers within ten (10) days of completion of the relevant work package.
- .4 Ensure that the documents provided are in good and due form, that they contain all the required information and that they are notarized.
- .5 Countersign documents to be submitted when necessary.
- .6 Keep guarantees and bonds until the prescribed time to surrender them.

.7 Except for items put into service with the authorization of the Contracting Authority, do not change the effective date of the warranty until the substantial completion date of the work has been determined.

.8 Four (4) months and nine (9) months after the date of receipt of the work, conduct a warranty inspection with the Departmental Representative.

.9 The collateral management plan must include or indicate the following.

.1 The roles and responsibilities of the persons associated with the various warranties, including the contact points and telephone numbers of those responsible within the Contractor's organizations, subcontractors, manufacturers, or suppliers involved in the work.

.2 The list and status of warranty certificates for elements and batches subject to extended warranties, including engines, transformers and systems put into service such as alarm systems.

.3 A list of all equipment, components, systems, or work packages covered by a warranty, each with the information set out below.

.1 The name of the item, hardware, system, or batch.

.2 Model and serial numbers.

.3 The location.

.4 The name and telephone number of manufacturers and suppliers.

.5 The name, address and telephone number of distributors of spare parts and replacement materials/materials.

.6 Warranties and their conditions of application, including a general construction warranty of one (1) year. The elements, materials, systems or lots covered by an extended warranty must be indicated, as well as the expiry date of each.

.7 References to warranty certificates, if applicable.

.8 The effective date and expiration date of the warranty.

.9 A summary of the maintenance activities to be carried out to ensure that the warranty is maintained.

.10 References to relevant operations and maintenance manuals.

.11 The name and phone number of the organization and the people to call for warranty service.

.12 The typical intervention and repair/troubleshooting times provided for the various guaranteed elements.

.4 The expression of the Contractor's intention to be present at the inspections scheduled four (4) months and nine (9) months after the completion of the work concerned.

.5 The procedure for labelling the elements, materials and systems covered by an extended warranty, and its progress.

.6 Posting copies of operation and maintenance instructions near designated equipment parts whose operating characteristics are important for warranty or safety reasons.

.10 Promptly respond to any verbal or written request for troubleshooting/repair work required under warranty.

.11 All verbal instructions must be followed by written instructions.

.1 The Departmental Representative may bring an action against the Contractor if the latter does not comply with its obligations.

1.13 WARRANTY TAGS

.1 At the time of installation, label each item, material or system covered by a warranty. Use labels that are durable, water and oil resistant and approved by the Departmental Representative.

.2 Attach the labels with a copper wire and spray a waterproof silicone coating on it.

.3 Leave the date of receipt until the work is accepted for occupancy.

.4 Labels must include the following information and signatures.

.1 Type of product/material.
.2 Model number.
.3 Serial number.
.4 Contract number.
.5 Warranty period.
.6 Inspector's signature.
.7 Signature of the Entrepreneur.

Part 2 Products

2.1 NOT USED.

.1 Not Used.

Part 3 Execution

3.1 NOT USED.

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All sections of the specifications.

1.2 ADMINISTRATIVE REQUIREMENTS

.1 Two (2) weeks before the date of substantial completion of the work, carry out, for the benefit of the Owner's staff, the planned demonstrations of the operation and maintenance operations of the equipment, equipment and systems installed.

.2 The Owner shall provide a list of the staff members who are to undergo this training and shall ensure, at the agreed times, their participation in the sessions organized for this purpose.

.3 Preparation:

- .1 Ensure that the conditions for performing demonstrations of the operation of devices, equipment, and systems as well as training sessions comply with the requirements.
- .2 Ensure that designated persons are present.
- .3 Ensure that devices, equipment, and systems have been inspected and operated in accordance with it.
- .4 Ensure that testing, adjustment, and balancing have been performed and that devices, equipment and systems are fully operational.

.4 Demonstration and Instructions:

- .1 Demonstrate how the start-up, operation, control, adjustment, fault diagnosis, sampling, care and maintenance of each device, hardware, and system, at the agreed times, at the location of these elements, is to be ensured.
- .2 Teach staff all stages of operation and maintenance of devices, materials and systems using the operations and maintenance manuals provided.
- .3 Conduct a detailed review of the content of these manuals to explain all aspects of operation and maintenance.
- .4 Collect, where appropriate, additional data required for training and include it in operations and maintenance manuals.

.5 Duration of training: provide the duration of the training required for each device, material or system as indicated below.

- .1 Division 44 for wastewater system facilities: two (2) hours.
- .2 Division 26 for electrical installations: one (1) hour.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit the required documents and samples in accordance with section 01 33 00 - Documents and samples to be submitted.

.2 Two (2) weeks prior to the specified dates, submit to the Departmental Representative, for approval, a schedule indicating the expected date and time for the demonstration of operation of each device, equipment, and system.

.3 Within one week of the demonstrations presented, submit documents confirming that they have been completed and that appropriate training has been provided satisfactorily.

.4 Specify the date and time of each demonstration performed as well as the list of people present.

.5 Provide complete copies of operations and maintenance manuals for use in the demonstration of the operation of devices, equipment and systems and related training sessions.

1.4 QUALITY ASSURANCE

.1 Where it is prescribed in certain sections that an authorized representative of the manufacturer must demonstrate the operation of the installed apparatus, equipment, and systems,

.1 ensure the training of the Owner's staff;

.2 provide a written document confirming that such a demonstration has been completed and that related training has been provided.

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 SUMMARY

.1 This section includes:

.1 Abandon on site and remove the works below ground level.

.2 Disconnect, cover or seal, abandon on site and remove utilities from the site.

1.2 RELATED REQUIREMENTS

.1 All sections of the quote.

1.3 DEFINITIONS

.1 Demolition: a method of rapid disposal of a structure or structure, with prior removal of hazardous materials from it.

.2 Hazardous materials: dangerous substances, dangerous good, hazardous products, may include, but are not limited to, asbestos, PCBs, CFCs, HCFCs, poisons, corrosive agents, flammable materials, ammunition, explosives, radioactive substances, or any other materials that, when misused, may have an adverse impact on human health or well-being, or on the environment.

1.4 REFERENCE STANDARDS

.1 Groupe CSA (CSA)

.1 CSA S350-FM1980(R2003), Code of Practice for Safety in Demolition of Structures.

.2 Department of Justice Canada (Jus)

.1 Canadian Environmental Assessment Act (CEAA) 2012

.2 Canadian Environmental Protection Act (CEPA), 2012

.1 On-Road Vehicle and Engine Emission Regulations (SOR/2003-2)

.2 Regulations Amending the On-Road Vehicle and Engine Emission Regulations (SOR/2006-268)

.3 Transportation of Dangerous Goods Act, 1992 (TDMA), c. 34

.4 Motor Vehicle Safety Act, 1995

.5 Hazardous Materials Information Review Act, 1985

.3 National Fire Protection Association (NFPA)

.1 NFPA 241 - 96, Standard for Safeguarding Construction, Alteration, and Demolition Operations

.4 National Research Council Canada (NRC)

.1 National Building Code of Canada 2015 (NBC).

.2 National Fire Code of Canada 2015 (NFC).

.5 Underwriters' Laboratories of Canada (ULC)

.1 CAN/ULC-S660-08, Non-metallic Underground Pipelines for Flammable and Combustible Liquids

.2 ULC/ORD-C58.15-1992, Overfill Protection Devices for Flammable Liquid Storage Tanks

.3 ULC/ORD-C58.19-1992, Spill Containment Devices for Underground Flammable Liquid Storage Tanks

.6 United States Environmental Protection Agency (EPA)/Office of Water

.1 EPA CFR 86.098-10, Emission standards for 1998 and later model year Otto-cycle heavy-duty engines and vehicles

.2 EPA CFR 86.098-11, Emission standards for 1998 and later model year diesel heavy-duty engines and vehicles

.3 EPA 832/R-92-005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.5 ADMINISTRATIVE REQUIREMENTS

.1 Coordination: Coordinate the requirements of this article on the ownership of materials/materials with the Owner, but does not exclude the following:

.1 Except for materials/materials intended, as directed, to be reused, recovered or reinstalled or materials/materials which, unless otherwise specified, must remain the property of the Owner, the demolition materials will become the property of the Contractor and will be removed from the project site.

.2 Historical elements, relics, and other similar objects, including but not limited to commemorative stones and their contents, commemorative plaques, antiques and other elements of interest or value to the Owner and which are likely to be part of the demolition materials remain the property of the Owner.

.2 Pre-demolition meetings:

.1 Hold a pre-installation meeting one (1) week prior to the commencement of work under this Section, to which the Contractor and the Departmental Representative will be invited, in accordance with section 01 31 19 - Project Meetings.

.3 Scheduling:

.1 Implement all necessary means to ensure that the work schedule is respected, without compromising the prescribed minimum percentages of materials to be reused/reused and recycled.

.2 Inform the Departmental Representative in writing of any delays.

1.6 ACTION AND INFORMATIONAL SUBMITTALS

.1 Documents/samples to be submitted: Provide the following documents/samples before commencing the work under this section:

.1 Shop drawings: Workshop drawings submitted must bear the seal and signature of an engineer recognized or authorized to practice in the province, as follows:

.1 Submit the required documents and samples in accordance with section 01 33 00 - Documents/Samples to be submitted.

.2 Schedule of Demolition Activities: Coordinate the requirements of this section with those of section 01 32 16.16 - Scheduling of Work

.2 Documents/Samples to be submitted in relation to sustainable design

.1 Construction waste management

.1 Submit the construction waste management plan for the project, which must specify recycling and recovery requirements.

1.7 QUALITY ASSURANCE

.1 Regulators' Requirements: Ensure that work is carried out in accordance with CEPA, CEAA, TDAM and applicable provincial regulations.

.2 Comply with the regulations on transport and disposal adopted by the competent authority.

.3 Standards: according to ANSI A10.6 and NFPA 241.

1.8 SITE CONDITIONS

.1 Check the Hazardous Substances Report and take the necessary measures to preserve the environment.

.2 If a material resembling sprayed asbestos or trowel or other materials designated and listed as hazardous is discovered during the performance of the work, suspend the work, take appropriate precautions, and immediately notify the Departmental Representative.

.1 Resume work only after receiving written instructions from the Departmental Representative.

.3 Notify the Departmental Representative before obstructing access or interrupting services.

.4 Environmental protection:

.1 Carry out the work in accordance with section 01 35 43 - Environmental protection.

1.9 EXISTING CONDITIONS

.1 Hazardous Materials: No hazardous materials are expected to be discovered during the work.

Part 2 Products

2.1 EQUIPMENT

.1 Heavy equipment and machinery

.2 On-road vehicles must comply with the requirements of the On-Road Vehicle and Engine Emission Regulations, SOR/2003-2, made under CEPA and the Regulations Amending the On-Road Vehicle and Engine Emission Regulations, SOR/2006-268, made under CEPA.

.3 All-terrain vehicles must meet the requirements of EPA CFR 86.098-10 and EPA CFR 86.098-11

.4 Shut down machines as soon as they end their use unless extreme temperature conditions require uninterrupted operation.

Part 3 Execution

3.1 EXAMINATION

.1 Verify existing conditions and coordinate with stated requirements to establish the area of the infrastructureto be demolished.

.2 Review the project file on the existing construction provided by the Departmental Representative.

.3 The Departmental Representative does not guarantee that the existing conditions and the conditions indicated in the project file are the same.

.4 Draw up an inventory of the items to be removed and recovered as well as their condition.

.5 Conduct a review of the unanticipated mechanical, electrical, and structural elements and measure the nature and scope of these elements.

.6 Submit a written report to the Departmental Representative without delay.

.7 Check if the hazardous materials have been treated before starting demolition.

3.2 PREPARATORY

.1 Temporary means of erosion and sediment control

.1 Implement temporary erosion and sediment control measures to prevent soil loss and to prevent the deposit of sediments carried by runoff or wind-driven dust and particles on adjacent properties and pedestrian walkways, in accordance with the requirements of the competent authorities.

.2 Protection of existing structures

.1 Take the necessary measures to prevent the displacement, subsidence or other damage to structures, utility pipes and landscaping works to be preserved. Squeal and brace structures as required.

.2 Limit as much as possible the dust and noise produced by the work, as well as the inconvenience caused to the occupants of the premises.

.3 Protect the building's mechanical and electrical appliances, systems, and installations as well as utility pipes.

.4 Provide dust screens, tarpaulins, guardrails, support elements and other necessary protective devices.

.5 Perform the work in accordance with section 01 35 29.06 - Health and Safety.

.3 Demolition/removal work

.1 Demolish parts of the infrastructure, as indicated.

.2 At the end of each working day, make sure that the structure is safe and stable.

.3 Carry out demolition work in such a way as to raise as little dust as possible. Keep materials wet as directed by the Departmental Representative.

.4 It is forbidden to dispose of prescribed materials other than by the ecological method specified by the Departmental Representative or by reserving them for one's own use.

.4 Remove the following equipment and devices and store them at the location designated by the Departmental Representative.

.1 Control panel of the pumping station of the workshop.

.2 Control panel of the pumping station of the interpretation center.

3.3 SITE RESTORATION AND REPAIRS

.1 Areas below ground level: Completely backfill areas below ground level and depressions caused by demolition. Use backfill material that meets the backfilling requirements of section 31 00 00 - Documents/Samples to be submitted.

.2 Site leveling: Perform a coarse and uniform leveling of the demolition area to achieve a smooth surface free of unevenness.

.3 Ensure a gradual transition from existing surfaces to new adjacent surfaces.

.4 General: Repair without delay the damage caused to the adjacent construction by demolition operations.

.5 Patch existing surfaces that need to be repaired so that they can be prepared to receive a new material.

3.4 CLEANING

.1 Cleaning during work: perform the cleaning work in accordance with section 01 74 00 - Cleaning.

.1 Leave the premises clean at the end of each working day.

.2 Final cleaning: remove surplus materials/materials, waste, tools, and equipment from the site in accordance with section 01 74 00 - Cleaning.

.3 Refer to demolition requirements and drawings to find out which materials and materials need to be recovered for reuse/reuse.

.4 Waste management: sorting waste for reuse/re-use and recycling.

.1 Remove recycling bins and dumpsters from the job site and dispose of materials at the appropriate facilities.

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 This section contains descriptions of the demolition, recovery, recycling and removal of items that are to be removed from the site, in whole or in part. The section also contains descriptions of trench backfilling as well as excavations resulting from demolition activities at the site.

1.2 RELATED REQUIREMENTS

.1 All sections of the quote.

1.3 DEFINITIONS

.1 Selective demolition: Schedule demolition activities to allow for the sorting of materials on site.

.2 Hazardous substances: hazardous substances, goods, goods and products that may include, but are not limited to, PCBs, CFCs, HCFCs, poisons, corrosive agents, flammable materials, ammunition, explosives, radioactive substances and all other materials that, when misused, may adversely affect human health or well-being, or on the environment.

1.4 REFERENCE STANDARDS

.1 ASTM International

.1 ASTM C1107 Standard Specification for Packaged Dry, Hydraulic Cement Grout (Nonshrink)

.2 Department of Justice Canada (Jus)

.1 Canadian Environmental Assessment Act, 2012 (CEAA)

.2 Canadian Environmental Protection Act, 1999 (CEPA)

.1 On-Road Vehicle and Engine Emission Regulations (SOR/2003-2)

.2 Regulations Amending the On-Road Vehicle and Engine Emission Regulations (SOR/2006-268)

.3 Transportation of Dangerous Goods Act, 1992 (1992, c. 34)

.4 Motor Vehicle Safety Act (1993, c. 16)

.5 Hazardous Materials Information Review Act (R.S.C. 1985

.3 Underwriters' Laboratories of Canada (ULC)

.1 CAN/ULC-S660-08, Non-metallic Underground Pipelines for Flammable and Combustible Liquids

.2 ULC/ORD-C58.15-1992, Overfill Protection Devices for Flammable Liquid Storage Tanks

.3 ULC/ORD-C58.19-1992, Spill Containment Devices for Underground Flammable Liquid Storage Tanks

.4 United States Environmental Protection Agency (EPA)

.1 EPA CFR 86.098-10, Emission standards for 1998 and later model year Otto-cycle heavy-duty engines and vehicles

.2 EPA CFR 86.098-11, Emission standards for 1998 and later model year diesel heavy-duty engines and vehicles

.1 EPA 832/R-92-005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices

1.5 ADMINISTRATIVE PROCEDURES

.1 Coordinate requirements with the Departmental Representative regarding the ownership of materials, including:

.1 Except for elements or materials that must be reused, recovered, or reinstalled or that must remain the property of the Owner, the demolition materials will become the property of the Contractor and will be removed from the site.

.2 Historical items, relics and other similar objects, including but not limited to cornerstones and their contents, commemorative plaques, tablets, antiques and other items of interest or value to the Owner and likely to be discovered during demolition remain the property of the Owner:

.1 Carefully disassemble and recover each item or object in such a way as to avoid damage, and promptly hand it over to the Owner.

.2 Coordinate requirements with the Owner, which will establish special methods for dismantling and recovery activities.

.2 Pre-Demolition meetings

.1 One (1) week prior to the commencement of the Work covered by this Section and the execution of the Work, hold a meeting with the Contractor and the Departmental Representative in accordance with Section 01 31 19 - Project Meetings which will address the following:

.1 Verification of the needs for the work.

.2 Verification of existing conditions in the vicinity of the place where the demolition work will be carried out.

.3 Coordination of requirements with those of other trades.

.4 Examination of existing conditions in the vicinity of the demolition work before work begins.

.5 Waste reporting requirements.

.2 Ensure the presence of all key personnel.

.3 At each meeting, the Entrepreneur must report verbally on the status of the waste recovery situation.

.4 In the event of a change in the dates and/or times of the meeting established at the time of the award of the contract, the Departmental Representative will notify the interested parties in writing 24 hours before the time announced for the meeting.

.3 Scheduling:

.1 Pmake all the measures necessary to comply with both the work schedule and the minimum percentages prescribed for the recovery of waste.

.2 In the event of an unforeseen delay, notify the Departmental Representative in writing.

1.6 ACTION AND INFORMATIONAL SUBMITTALS

.1 Documents/samples to be submitted for approval: Submit the following documents and samples before commencing the work required under this section.

.1 Shop drawings: Workshop drawings submitted must bear the seal and signature of a qualified engineer recognized or licensed to practise in the province, Canada, as follows:

.1 Submit, for review and approval, drawings, schematics, or details indicating the order of selective demolition work on the site.

.2 Submit documents/samples in accordance with section 01 33 00 - Documents and samples to be submitted.

.2 Make a list of items removed and recovered once selective demolition is complete.

.1 Proof of landfill: Indicate the date on which a certified landfill accepted the hazardous waste.

.2 Pre-demolition photographs or videotapes: Submit photographs or videotapes on the condition of the works and adjacent developments prior to the commencement of work. Document the finishing of surfaces to prevent existing damage from being attributed to selective demolition activities.

.2 Documents/samples to be submitted in relation to sustainable design:

.1 Erosion and Sediment Control: Submit one (1) copy of the Erosion and Sediment Control Plan in accordance with the appropriate authorities.

1.7 QUALITY ASSURANCE

.1 Regulators' requirements: ensure that all work is carried out in accordance with CEPA, CEAA, TDAM, MVSA, and all relevant provincial regulations.

.2 Comply with the regulations on transport and disposal adopted by the competent authority.

1.8 EXISTING CONDITIONS

.1 Environmental protection

.1 Carry out the work in accordance with section 01 35 43 - Environmental protection.

.2 Ensure that the work does not cause adverse effects on wildlife, groundwater, and adjacent waterways, and that it does not generate excessive levels of air or acoustic pollution.

.3 It is forbidden to burn waste and materials on the construction site.

.4 No waste or scrap material should be buried on the construction site.

.5 Do not discharge waste composed of volatile materials, such as mineral spirits, oils, petroleum-based lubricants, or toxic cleaning solutions, into waterways or storm or sanitary sewers.

.6 Enforce appropriate methods of disposal of this type of waste throughout the duration of the work.

.2 Do not discharge water containing suspended solids into streams, storm sewers, sanitary sewers, or adjacent lands, either by pumping or otherwise.

.3 Ensure the disposal of runoff containing suspended solids or other deleterious substances in accordance with the directives of the local authorities and according to the instructions of the Departmental Representative

.4 Protect vegetation (trees, plants, shrubs, foliage) on the land and adjacent properties, as indicated.

.5 Cover dry matter and waste or wet felling to prevent dust and debris from rising. Apply a dust suppressant to all temporary access roads.

.6 Carry out selective demolition, avoiding disruption to the Owner's activities:

.1 Notify the Departmental Representative and Owner at least 72 hours in advance of the work that will disrupt its activities.

.2 Maintain access to pedestrian walkways, exits and adjacent facilities that are occupied or used:

.1 Do not block or obstruct pedestrian walkways, exits or other facilities that are occupied or used without the written permission of the Departmental Representative.

.7 The Departmental Representative assumes no responsibility for the selective demolition of the elements of the site.

.1 The conditions present during the inspection carried out for the purpose of submission will be maintained by the Departmental Representative to the extent possible.

.2 Remove, protect and store recovered items prior to selective demolition, as directed by the Departmental Representative

.1 Retrieve items designated by the Departmental Representative.

.2 Deliver them to the Owner, according to the instructions received.

1.9 SITE CONDITIONS

.1 Hazardous Materials: Hazardous materials are not expected to be discovered in the course of the work.

.1 Hazardous materials are those defined in the Hazardous Products Act.

.2 Avoid disturbing the site if materials that may contain hazardous materials are discovered; notify the Departmental Representative without delay. Hazardous materials will be removed by the Departmental Representative under a separate contract or modification to the work.

.3 When materials like asbestos materials applied to the trowel or spray or any other controlled substance in the list of hazardous materials are discovered during the execution of the demolition work, the demolition work must be discontinued, appropriate preventive measures must be taken, and the Departmental Representative must be informed immediately. Do not resume work until written instructions have been received from the Departmental Representative.

.4 The selection of elements to be demolished is based on their condition at the time of the site inspection before the bid is submitted.

Part 2 Products

2.1 EQUIPMENT

.1 Heavy equipment and machinery

.1 On-road vehicles must comply with the requirements of the On-Road Vehicle and Engine Emission Regulations, SOR/2003-2, made under CEPA and the Regulations Amending the On-Road Vehicle and Engine Emission Regulations, SOR/2006-268, made under CEPA.

.2 All-terrain vehicles must meet the requirements of EPA CFR 86.098-10 and EPA CFR 86.098-11.

.3 Shut down machines as soon as they end their use unless extreme temperature conditions require uninterrupted operation.

2.2 CONCRETE GROUT WITHOUT SHRINKAGE

.1 Use a non-shrinkage concrete grout that complies with ASTM C1107, or approved equivalent.

Part 3 Execution

3.1 INSPECTION

.1 Verify existing conditions and coordinate with stated requirements to determine the area of infrastructure that needs to be selectively demolished.

.2 The Departmental Representative does not guarantee that the existing conditions and the conditions indicated in the project file are the same.

.3 Draw up an inventory of the items to be removed and recovered as well as their condition.

.4 Conduct a review of the unanticipated mechanical, electrical, and structural elements and measure the nature and scope of these elements. Submit a written report to the Departmental Representative without delay.

.5 Check if the treatment of hazardous materials has been carried out before carrying out demolition activities on the site.

3.2 PREPARATION

.1 Temporary means of erosion and sediment control

.1 Implement temporary erosion and sediment control measures to prevent soil loss and to prevent the deposit of sediments carried by runoff or wind-driven dust and particles on adjacent properties and pedestrian walkways, in accordance with the requirements of the competent authorities.

.2 Inspect the means of control put in place, ensure their maintenance, and repair them if necessary, during the demolition work.

.3 After the completion of the demolition work, remove the means of struggle and rehabilitate and stabilize the surfaces stirred during the removal work.

.2 Protection of existing structures

.1 Order the work in accordance with section 01 35 43 - Environmental Protection and the Erosion and Sediment Control Plan and the Stormwater Pollution Prevention Plan.

.2 Take the necessary measures to prevent the displacement or subsidence of utility pipes, landscaping, and adjacent soils to prevent damage.

.1 Supply and install bracing and shoring parts and carry out the necessary underpinning work.

.2 If necessary, repair the works damaged during the demolition work according to the directives of the Departmental Representative

.3 Properly support the structures or structures concerned. If the demolition work appears to constitute a danger to the rest of the structure or structure or to the utility pipes, take appropriate precautionary measures, stop the work, and notify the Departmental Representative.

.4 Ensure that demolitions do not obstruct the surface water drainage system, elevators, and electrical and mechanical systems that must remain in operation.

.3 Surface preparation:

.1 Disconnect and reroute the electricity and telecommunications pipes that supply the structures or structures to be deconstructed.

.1 Place warning plates on electrical equipment and pipes that must remain energized during selective demolition work to supply other structures.

.2 Disconnect and plug designated pipes from mechanical installations.

.1 Water and sewer pipes: remove pipes as directed by the Departmental Representative.

.3 It is forbidden to disturb utility pipes that are in service or energized and that do not have to be moved.

3.3 INJECTION OF CONCRETE GROUT FOR DE-FATTENING A PIPE

.1 Provide a method to allow the evacuation of air during the injection of concrete and the complete filling of the pipes to be decommissioned.

.2 Place a permanent plug adapt to the pipes after the injection of concrete. Provide a cap retention system during concrete treatment.

3.4 REMOVAL AND DEMOLITION OPERATIONS

.1 Remove prescribed works, as directed.

.2 It is forbidden to disturb works designated as being to remain in place.

.3 During demolition, remove trees that interfere with the work.

.1 Obtain written approval from the Departmental Representative before removing a tree.

.4 Eliminate trees that need to be removed using an ecological method.

.1 Grind, chip or shred any other vegetation for mulch or compost, or for use as pulp or fuel.

.5 Deposit topsoil for final levelling and landscaping work.

.1 If this land is not immediately used, provide for anti-erosion measures and seeding work.

.6 Recovery

.1 Dismantle the elements containing materials to be recovered and deposit, at the places indicated, the materials thus recovered.

.7 Elimination

.1 Evacuate materials not designated as to be recovered or reused/reused on site, as directed by the Departmental Representative, to facilities authorized and approved in the waste reduction plan.

.2 If the demolitions are eliminated on the construction site itself, rehabilitate the areas used for this purpose, to the satisfaction of the Departmental Representative.

.8 Backfilling: Perform backfilling work at the indicated locations and in accordance with section 31 23 33.01 - Excavation, Trench Digging and Backfilling.

3.5 STOCKPILING

.1 Label all deposited materials, indicating the nature and quantity of materials recovered.

.2 Take appropriate security measures and allocate sufficient resources to prevent theft, vandalism, and deterioration of materials.

.3 Deposit the materials in a place that will lend themselves to their reuse/reuse in a new construction. Eliminate duplicate handling as much as possible.

.4 Deposit materials intended for environmentally friendly disposal in a location that, on the one hand, will facilitate their evacuation from the site and their examination by potential users interested in their reuse/reuse, and, on the other hand, will not hinder their dismantling, processing, or transport by truck.

3.6 REMOVAL FROM SITE

.1 If they hinder the progress of the work, the materials deposited must be evacuated according to the instructions of the Departmental Representative.

.2 Dispose of materials of a similar nature that have been deposited and disposed of using the same environmentally friendly method once the collection of these materials is complete.

.3 Transport materials for environmentally sound disposal using approved trucking companies, treatment facilities and waste acceptance organizations identified in the construction waste management plan and in accordance with relevant regulations:

.1 Written authorization from the Departmental Representative must be obtained to use trucking companies, treatment facilities or organizations that accept waste other than those identified in the construction waste management plan.

.4 Dispose of products and materials that are not intended for environmentally sound disposal in accordance with relevant regulations.

.1 Use approved landfills, as indicated in the waste reduction plan.

.2 Written authorization from the Departmental Representative must be obtained to transport products and materials to landfills other than those specified in the waste reduction plan.

3.7 RESTORATION

.1 Return surfaces and structures outside the demolition areas to the state of adjacent unmutled surfaces.

.2 Use only soil treatment methods and products that are not harmful to health or harmful to vegetation, and that do not endanger wildlife, adjacent waterways, and groundwater.

3.8 CLEANING

.1 Cleaning during work: perform the cleaning work in accordance with section 01 74 00 - Cleaning.

.1 Leave the premises clean at the end of each working day.

.2 Once the work is complete, remove debris, sweep surfaces, and leave the job site clean.

.3 Use cleaning solutions and methods that are not harmful to health or harmful to vegetation, and that do not endanger wildlife, adjacent waterways, and groundwater.

.2 Final cleaning: remove surplus materials/materials, waste, tools, and equipment from the site in accordance with section 01 74 00 - Cleaning.

.3 Waste management: sorting waste for reuse/re-use and recycling.

.1 Remove recycling bins and dumpsters from the job site and dispose of materials at the appropriate facilities.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All sections of the specifications.

1.2 DEFINITIONS

.1 Dangerous Goods: a product, substance or organism listed in the Transportation of Dangerous Goods Regulations or meeting the hazard criterion set out in those Regulations.

.2 Hazardous material: a product, substance or organism used for its original purpose, and which has a negative impact on the environment or on the health of humans, animals or plants when released into the environment.

.3 Hazardous waste: a hazardous material that is no longer used for its original purpose and needs to be recycled, treated, or disposed of.

1.3 REFERENCE STANDARDS

.1 Canadian Environmental Protection Act, 1999 (CEPA 1999)

.1 Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations (SOR/2005-149).

.2 Department of Justice Canada (Jus)

.1 Transportation of Dangerous Goods Act, 1992, c. 34 (TDPA).

.2 Transportation of Dangerous Goods Regulations (T-19.01-SOR/2001-286).

.3 Green Seal Environmental Standards (GS)

.1 GS-11-2008, 2nd Edition, Paints and Coatings.

.2 GS-36-00, Commercial Adhesives.

.4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 WHMIS Safety Data Sheets (SDS).

.5 National Research Council Canada (NRC)

.1 National Fire Code of Canada 2015 (NFC).

.6 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards

.1 SCAQMD Rule 1113-A2007, Architectural Coatings.

.2 SCAQMD Rule 1168-A2005, Adhesive and Sealant Applications.

1.4 ACTION AND INFORMANTIONAL SUBMITTALS

.1 Submit the required documents and samples in accordance with section 01 33 00 - Documents and samples to be submitted.

.2 Data sheets

.1 Submit the required data sheets as well as the manufacturer's instructions and documentation for the hazardous materials concerned. The data sheets must indicate the characteristics of the products, the performance criteria, the dimensions, the stresses, and the finish.

.2 In accordance with section 01 35 29.06 - Health and Safety and 01 35 43 - Environmental Protection, submit to the Departmental Representative, before introducing any hazardous material on site, two (2) copies of the WHMIS Safety Data Sheets (SDS).

.3 Provide the Departmental Representative with a hazardous materials management plan, indicating the name of all hazardous materials, their use, location, required personal protective equipment and arrangements for their disposal.

.4 Hazardous Waste Classification: Indicate the waste codes applicable to each hazardous material based on applicable federal and provincial laws, regulations, and directives. Submit waste profiles, analyses, and classification to the contracting office responsible for review and approval.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Transport, store and handle materials and materials in accordance with section 01 61 00 - General Product Requirements and the manufacturer's written instructions.

.2 Delivery and acceptance: deliver materials and materials to the construction site in their original packaging, which must bear a label indicating the name and address of the manufacturer.

.3 Transport hazardous materials and wastes in accordance with the Transportation of Dangerous Goods Act, the Transportation of Dangerous Goods Regulations, and relevant provincial regulations.

.1 The export of hazardous waste to another country must be in accordance with the Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations.

.4 Storage and handling

.1 Coordinate the storage of hazardous materials with the Departmental Representative and comply with local requirements regarding the labelling and storage of hazardous materials and waste.

.2 Store and handle hazardous materials and waste in accordance with applicable federal and provincial laws, regulations, codes, and guidelines.

.3 Store and handle flammable and combustible materials in accordance with the requirements of the National Fire Code of Canada (NFC).

.4 Up to 45 liters of gasoline, kerosene, naphtha or other flammable or combustible liquids may be kept on site, provided the following conditions are met.

.1 Flammable or combustible liquids must be stored in approved containers bearing the Certification Label of Underwriters' Laboratories of Canada or Factory Mutual.

.2 The storage of more than 45 litres of flammable or combustible liquids must be approved by the Departmental Representative.

.5 It is forbidden to transfer flammable or combustible liquids inside buildings.

.6 If applicable, transfer flammable or combustible liquids away from any open flame or heat-generating device.

.7 The diluents and cleaning products used must be non-flammable and have a flash point greater than 38 degrees Celsius.

.8 Flammable or combustible spent liquids should be kept on site; these should be stored in approved containers, in a safe and ventilated place.

.9 Comply with regulations regarding smokers. Smoking is prohibited in areas where hazardous materials are stored, used, or handled.

.10 Comply with the following requirements for the storage of hazardous materials and wastes in quantities exceeding 5 kg in the case of solid substances and exceeding 5 L in the case of liquid substances.

.1 Store hazardous materials and wastes in closed and sealed containers.

.2 Label containers of hazardous materials and waste in accordance with WHMIS requirements.

.3 Store hazardous materials and wastes in containers compatible with the material or waste in question.

.4 Separate incompatible materials and waste.

.5 Store different hazardous materials and wastes in separate containers.

.6 Store hazardous materials and waste in a safe place, access to which is controlled.

.7 Maintain a well-defined escape route from the storage area.

.8 Store hazardous materials and waste in a location that will prevent their release into the environment.

.9 Place spill response equipment, including personal protective equipment, in the vicinity of the storage area.

.10 Maintain an up-to-date inventory of hazardous materials and wastes, including product names, quantity and start date of storage.

.11 Comply with the following requirements if hazardous waste is generated on the site.

.1 Coordinate the transportation and disposal of hazardous waste with the Departmental Representative.

.2 Comply with relevant federal, provincial, and municipal laws and regulations regarding hazardous waste producers.

.3 Use the services of a carrier authorized by provincial authorities to take the materials in question.

.4 Before shipping the hazardous materials, obtain written notice from the planned hazardous waste treatment or disposal facility, confirming that the facility will accept the hazardous materials and is authorized to do so.

.5 Affix visible safety marks to containers as required by relevant provincial and federal regulations.

.6 Ensure that person’s handling, offering for transport or transporting dangerous goods have received adequate training.

.7 Provide the Departmental Representative with a photocopy of all shipping documents and waste manifests.

.8 Follow the manifest path completed by the consignee of the dangerous goods shipped. Provide the Departmental Representative with a photocopy of the completed manifest.

.9 Immediately report any loss, emission, or leak of hazardous material to the Departmental Representative and the appropriate provincial authority. Take reasonable measures to prevent releases of hazardous materials.

.12 Ensure that personnel have received appropriate training in accordance with whMIS (Workplace Hazardous Materials Information System) requirements.

.13 Report spills or accidents to the Departmental Representative immediately. Submit a written report to the Departmental Representative within 24 hours of the incident.

.5 Develop a construction waste management plan for the work covered by this section.

.6 Packaging Waste Management: Recover packaging waste for reuse/re-use and take back of pallets, crates, and other packaging materials by their manufacturer.

Part 2 Products

2.1 MATERIALS

.1 Description

.1 Keep on the site only the quantities of hazardous materials necessary for the execution of the work.

.2 Keep WHMIS Safety Data Sheets (SDS) close to where the hazardous materials are used and inform those who may be exposed to them.

.3 Spill Response Materials and Equipment: provide spill response materials and equipment, including absorbents, shovels, and materials and materials that will be used to mitigate the impact of the hazardous materials spill.

.4 Provide personal protective equipment.

Part 3 Execution

3.1 CLEANING

.1 Cleaning during work: perform the cleaning work in accordance with section 01 74 00 - Cleaning.

.1 Leave the premises clean at the end of each working day.

.2 Final cleaning: Once the work is completed, remove surplus materials/materials, waste, tools and equipment from the site in accordance with section 01 74 00 - Cleaning.

.3 Waste management: sorting waste for reuse/re-use and recycling.

.1 Dispose of hazardous waste in accordance with relevant federal and provincial legislation, guidelines, and regulations.

.2 Recycle hazardous waste for which there is a cost-effective recycling process.

.3 Ship hazardous waste to licensed hazardous waste treatment and disposal facilities.

.4 It is forbidden to burn, dilute or mix hazardous waste for disposal.

.5 It is forbidden to dispose of hazardous materials in a watercourse, storm sewer, sanitary sewer or controlled municipal landfill.

.6 Dispose of hazardous waste in a timely manner in accordance with relevant provincial regulations.

.7 Reduce the generation of hazardous waste where possible. Take the necessary measures to prevent clean waste from being mixed with contaminated waste.

.8 Identify and evaluate options for recycling and recovery as alternatives to landfilling, for example:

.1 recycling of hazardous waste in a manner that constitutes its disposal;

.2 burning of hazardous waste for energy recovery;

.3 recycling of lead-acid batteries;

.4 recycling of hazardous waste containing precious metals that can be recovered profitably.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 31 05 16 - Aggregates.

.2 33 31 23 - Sewer lines and valve.

1.2 REFERENCE STANDARDS

.1 Groupe CSA (CSA)

.1 CSA A23.1/A23.2-2000, Concrete - Constituents and Work Execution/Standard Tests and Practices for Concrete.

.2 CSA A23.4- R2021, Precast concrete: constituents and execution of the work.

.3 CSA A3000-1 8, Compendium of Binding Materials.

.4 CSA G30.18-R2019, Carbon Steel Bars for Concrete Reinforcement.

1.3 MEASUREMENT AND PAYMENT

.1 Measure the supply and installation of prefabricated concrete curbs for parking lots individually, according to the number of curbs of each size and type put in place.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit the required documents and samples in accordance with section 01 33 00 - Documents/Samples to be submitted.

.2 Data sheets:

.1 Submit the required data sheets as well as the manufacturer's instructions and documentation regarding the ends of the concrete culvert. The data sheets must indicate the characteristics of the products, the performance criteria, the dimensions, the mixture, the limits, and the finish.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Transport, store and handle materials and materials in accordance with section 01 61 00 - General Product Requirements and the manufacturer's written instructions.

.2 Delivery and acceptance: deliver materials and materials to the construction site in their original packaging, which must bear a label indicating the name and address of the manufacturer.

.3 Storage and handling:

.1 Store, handle and protect concrete curbs from damage.

.2 Replace or repair as directed by the Departmental Representative materials and materials damaged by new materials and materials.

Part 2 Products

2.1 CONCRETE MIXES

.1 Concrete end with anominal diameter of 250 mm and 900 mm.

.1 Watertight and particle tight.

.2 Type of interlocking to be coordinated with existing pipes.

.2 Para-pile wall in concrete fabricated

.1 Minimum height of 400 mm.

2.2 MATERIALS

.1 Portland cement according to CSA A3000.

.2 Water: according to CSA A23.1/A23.2.

.3 Aggregates: according to CSA A23.1/A23.2.

.1 Large aggregates: of normal densitye.

.4 Additional hydraulic materials: according to CSA A3000.

.5 Compensated shrinkage grout: a premixed product containing non-metallic aggregates, portland cement, a plasticizer, and a water reducer.

.1 Compressive strength: 35 MPa at 28 days.

2.3 CONCRETE DOSING

.1 Mix concrete according to CSA A23.1/A23.2.

2.4 MANUFACTURE

.1 Manufacturing: borders in accordance with CSA A23.4.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of conditions: Before proceeding with the installation of precast concrete, ensure that the condition of surfaces/supports previously implemented under other sections or contracts is acceptable and allows the work to be carried out in accordance with the manufacturer's written instructions.

.1 Make a visual inspection of the surfaces/supports in the presence of the Departmental Representative

.2 Immediately inform the Departmental Representative of any unacceptable conditions detected.

.3 Begin installation work only after correcting the unacceptable conditions of the Departmental Representative.

3.2 SEATING MATERIALS

.1 Install granular materials in accordance with section 31 05 16 - Aggregates intended for the siting and covering of underground utility pipes. Compact them in accordance with section 33 31 23 - Sewer lines and valve

.2 The seating and covering materials put in place must not be frozen.

3.3 CONCRETE EXTREMITY

.1 Install concrete ends in accordance with the statements in section 33 31 23 - Sewer lines and valves.

3.4 CUTOFF WALL

.1 The cutoff wall shall be buried 400 mm below the radiator for pipes with a nominal diameter of less than 900 mm.

.2 The cutoff wall shall be buried 600 mm below the radiator for pipes with a nominal diameter of at least 900 mm.

3.5 CLEANING

.1 Cleaning during work: perform the cleaning work in accordance with section 01 74 00 - Cleaning.

.1 Leave the premises clean at the end of each working day.

.2 Final cleaning: remove surplus materials/materials, waste, tools, and equipment from the site in accordance with section 01 74 00 - Cleaning.

3.6 PROTECTION

.1 Protect installed equipment and elements from damage during construction work.

.2 Repair damage to adjacent materials and materials caused by the installation of prefabricated concrete special structures.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 26 05 00 – Selective demolition of the electrical installation

.2 26 05 20 - Connectors for cables and boxes (0-1000 v)

.3 26 05 21 - Wires and cables (0 - 1000 v)

.4 26 05 28 - Grounding of secondary school

.5 26 05 29 - Supports and suspensions for electrical installations

.6 26 05 32 - Output boxes, bypass boxes and accessories

.7 26 05 34 - Ducts, fasteners, and duct fittings

.8 26 05 43.01 - Laying of cables in trenches and conduits

.9 26 24 16.01 - Circuit breaker distribution panels

.10 26 28 16.02 - Circuit breakers under molded box

.11 26 28 20 - Ground-based leak protection devices - Class a

1.2 DEFINITIONS

.1 Electrical and electronic terms: Unless otherwise specified, the terminology used in this section and on the drawings is based on that defined in IEEE SP1122.

1.3 REFERENCE STANDARDS

.1 Canada Green Building Council (CaGBC)

.1 LEED Canada-NC, Version 1.0-2004, LEED (Leadership in Energy and Environmental Design): Green Building Rating System for New Construction and Major Renovations (Reference Kit) (including the 2007 Addendum).

.2 LEED Canada-CI, Version 1.0-2007, LEED (Leadership in Energy and Environmental Design): Sustainable Building Rating System for Commercial Space Interior Design.

.3 LEED Canada 2009 for Design and Construction-2010, LEED (Leadership in Energy and Environmental Design): Sustainable Building Rating System.

.4 LEED Canada-Existing Buildings, Operations and Maintenance 2009, LEED Canada 2009 (Leadership in Energy and Environmental Design): Existing Green Building Rating System: Operations and Maintenance.

.2 CSA Group

.1 CSA C22.1-21, Canadian Electrical Code, Part I (22nd Edition), Safety Standards for Electrical Installations.

.2 CSA C22.10-18, Quebec Construction Code, chapter V-Électricité.

.3 CAN/CSA-C22.3 Issue 1-20, Air Networks.

.4 CAN3-C235-F83(C2015), Recommended voltages for alternating current systems from 0 to 50,000 V.

.3 Institute of Electrical and Electronics (IEEE)/National Electrical Safety Code Product Line (NESC)

.1 IEEE SP1122-2000, The Authoritative Dictionary of IEEE Standards Terms, 7th Edition.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit the required documents and samples in accordance with section 01 33 00 - Documents/Samples to be submitted.

.2 Data sheets

.1 Submit the required data sheets as well as the manufacturer's instructions and documentation for all the elements shown in the plans. The data sheets must indicate the characteristics of the products, the performance criteria, the dimensions, the limits, and the finish.

.3 Submit, for examination, unifilar and unilingual diagrams framed under plexiglass, and place them in the office and/or building.

.1 Electrical distribution network: in the main room of electrical installations.

.2 Electricity production and distribution networks: in the room of the generators.

.4 Provide, for review, a vertical distribution diagram of the fire alarm system showing the plan and zoning of the building, framed under plexiglass, and place it near the control panel and fire alarm warning sign.

.5 shop drawings

.1 Workshop drawings submitted must bear the seal and signature of a competent engineer recognized or authorized to practice in the province of Quebec, Canada.

.2 The wiring diagrams and details of the installation of the equipment must indicate the proposed location, location, layout and layout, control panels, accessories, piping, ducts, and all other elements that must be shown to achieve a coordinated installation.

.3 The wiring diagrams must indicate the terminal terminals, the internal wiring of each device as well as the interconnections between the different devices.

.4 The drawings must indicate the clearances necessary for the operation, maintenance, and replacement of the equipment.

.5 Submit 1 copy of the digital version drawings with a page of annotations attached for each technical sheet requested in the list of workshop drawings requested by the inspection authority.

.6 If any changes are required, inform the Departmental Representative and the Consultant before they are made.

.6 Certificates

.1 Provide CSA certified devices and equipment.

.2 In cases where CSA certified devices and equipment cannot be obtained, submit the proposed devices and equipment to the inspection authorities for approval before being delivered to the site.

.3 Submit test results of installed electrical systems and instruments.

.4 Permits and rights: according to the general conditions of the contract.

.5 Once the work is complete, submit a load balancing report in accordance with the LOAD BALANCING article in PART 3.

.6 Once the work is completed, submit to the Departmental Representative and the Consultant the certificate of acceptance issued by the competent authority.

.7 Manufacturer's On-Site Inspection Reports: Submit to the Departmental Representative and consultant, no later than three (3) days after the completion of the inspections and tests of the electrical installation and instruments prescribed in THE ON-SITE QUALITY CONTROL section of PART 3, a written report from the manufacturer showing that the work meets the prescribed criteria.

1.5 CLOSEOUT SUBMITTALS

.1 Submit the required documents/items in accordance with section 01 78 00 - Documents/Items to be submitted upon completion of the work.

.2 Operations and Maintenance Sheets: Provide operation and maintenance instructions, which will be incorporated into the E&E manual.

.1 Provide operating instructions for each main system and for each main device prescribed in the relevant sections of the specification for E&E staff.

.2 Operating instructions should include the following.

.1 Wiring diagrams, control diagrams, control sequence for each main system and for each device.

.2 Start-up, adjustment, adjustment, lubrication, operation, and shutdown procedures.

.3 Security measures.

.4 Procedures to be observed in case of failure.

.5 Other instructions, according to the recommendations of the manufacturer of each system or device.

.3 Provide instructions that are printed or engraved, placed under glass frame or laminated in an approved manner.

.4 Display instructions in approved locations.

.5 Weather-exposed operating instructions must be made of resistant material or be placed in a weatherproof envelope.

.6 Ensure that operating instructions will not fade if exposed to sunlight.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Transport, store and handle materials and equipment in accordance with section 01 61 00 - General Product Requirements and the manufacturer's written instructions.

.2 Delivery and Acceptance: Deliver materials and materials to the job site in their original packaging, which must bear a label indicating the name and address of the manufacturer.

.3 Storage and handling

.1 Store materials and equipment so that they do not rest on the floor indoors in a dry, clean, dry and well-ventilated area, as recommended by the manufacturer.

.2 Store to protect against marks, scratches and scratches.

.3 Replace damaged materials and equipment with new materials and equipment.

Part 2 Products

2.1 DESIGN REQUIREMENTS

.1 Operating voltages must comply with CAN3-C235

.2 Motors, electric heaters, command/control and distribution devices shall operate satisfactorily at the frequency of 60 Hz and within the limits established in the above-mentioned standard.

.1 Devices must be able to operate without damage under the extreme conditions defined in this standard.

.3 Language of operation and display: provide for identification and display indicator plates and labels in English and French for command/control devices.

.4 Use an indicator plate or label for each language in both languages.

2.2 MATERIALS AND EQUIPMENT

.1 Equipment and appliances must comply with section 01 61 00 - General Product Requirements.

.2 Hardware and devices must be CSA certified. In cases where CSA certified material or apparatus cannot be obtained, submit the replacement material and equipment [to the competent authority to the inspection authorities before delivering them to the site, in accordance with ACTION AND INFORMATIONAL SUBMITTALS - PART 1.

.3 Command/control panels and component assemblies must be assembled at the factory.

2.3 ELECTRIC MOTORS, EQUIPMENT AND CONTROLS

.1 Verify installation and coordination responsibilities for engines, devices and controls/controls, as indicated.

2.4 WARNING SIGNS

.1 Warning signs: in accordance with the requirements of the competent authority of the inspection authorities of the Departmental Representative and the Consultant.

.2 Signs coated with oven-dried enamel paint decals, at least 175 mm x 250 mm.

2.5 WIRING TERMINATIONS

.1 Ensure that the lugs, terminals, and screws of the wiring terminations are suitable for both copper and aluminum conductors.

2.6 EQUIPMENT IDENTIFICATION

.1 To designate electrical appliances, use indicator plates and labels that comply with the following requirements.

.1 Indicator plates: engraved plates in lamicoid plastic 3 mm thick, with black or white melamine face with a matte finish and black or white core, mechanically fixed by means of tapping screws, with inscriptions in letters correctly aligned, engraved to the core of the plate.

.2 Format as indicated in the table below.

INDICATOR PLATE FORMAT
Format 1 10 mm x 50 mm 1 line Letters 3 mm high
Format 2 12 mm x 70 mm 1 line Letters 5 mm high
Format 3 12 mm x 70 mm 2 lines Letters 3 mm high
Format 4 20 mm x 90 mm 1 line Letters 8 mm high
Format 5 20 mm x 90 mm 2 lines Letters 5 mm high
Format 6 25 mm x 100 mm 1 line Letters 12 mm high
Format 7 25 mm x 100 mm 2 lines Letters 6 mm high

.2 Labels: Unless otherwise indicated, use plastic labels with 6 mm high raised letters.

.3 The inscriptions of the indicator plates and labels must be approved by the Departmental Representative before manufacture.

.4 Allow at least twenty-five (25) letters per plate and label.

.5 The indicator plates of terminal blocks and junction boxes shall indicate the characteristics of the network and/or voltage.

.6 Devices must bear a size 3 label, with the inscription "INVENTORY ITEM NUMBER [___]". Number as directed by the Departmental Representative.

.7 The indicator plates of disconnectors, starters and contactors shall indicate the apparatus being controlled and the voltage.

.8 The indicator plates of terminal blocks and drawing boxes must indicate the network and voltage.

.9 The indicator plates of the transformers shall indicate the power as well as the primary and secondary voltages.

2.7 WIRING IDENTIFICATION

.1 Both ends of the phase conductors of each artery and bypass circuit shall be permanently and indelibly marked with a [numbered][coloured] plastic tape.

.2 Maintain the order of the phases and the same color code for the entire installation.

.3 The color code must comply with CSA C22.1

.4 Use communication cables made up of conductors with uniform color tracking throughout the network.

2.8 CONDUIT AND CABLE IDENTIFICATION

.1 Color-coded ducts, boxes, and cables under metal sheath.

.2 Apply plastic tape or paint, as a means of tracking, to cables or ducts every 15 m and to crossing walls, ceilings, and floors.

.3 The bands of the basic colors must be 25 mm wide and those of the complementary colors 20 mm wide.

Colors:

Type	Prime	Auxiliary
Up to 250 V	yellow	
Up to 600 V	yellow	green
Up to 5 kV	yellow	blue
Up to 15 kV	yellow	red
Telephone	Green	
Other Communication		
Fire alarm	Red	
Emergency	Red	Blue
Other safety systems	Red	yellow

2.9 FINISHING

.1 The surfaces of metal envelopes must be finished in the workshop and coated with a rust-proof primer, inside and out, and with at least two (2) coats of finishing enamel paint.

.1 The electrical equipment to be installed outside must be painted "machine green" according to the plans.

.2 The cabinets of switching and distribution devices installed inside should be painted pale gray.

Part 3 Execution

3.1 INSPECTION

.1 Verification of conditions: Before proceeding with the installation of new equipment, ensure that the condition of surfaces/supports previously implemented under other sections or contracts is acceptable and allows the work to be carried out in accordance with the manufacturer's written instructions.

.1 Make a visual inspection of the surfaces/supports in the presence of the Departmental Representative and/or the Consultant.

.2 Immediately inform the Departmental Representative and the Consultant of any unacceptable conditions detected.

.3 Begin installation work only after correcting unacceptable conditions and receiving written approval from the Departmental Representative and the Consultant.

3.2 INSTALLATION

.1 Unless otherwise specified, perform the entire installation in accordance with CSA C22.1

.2 Unless otherwise specified, install overhead and underground networks in accordance with CAN/CSA-C22.3

3.3 NAMEPLATES AND LABELS

.1 Ensure that CSA labels, indicator plates and nameplates are visible and legible once the equipment is installed

3.4 CONDUIT AND CABLE INSTALLATION

.1 Install ducts and sleeves before pouring concrete.

.1 Concrete structure crossing sleeves: plastic pipe, diameter allowing the free passage of the duct and exceeding the concrete surface by 50 mm on each side.

.2 When using plastic sleeves for crossing walls or floors with a degree of fire resistance, remove them before installing the ducts.

.3 Install cables, ducts and fittings that need to be drowned or coated with plaster by carefully arranging them against the building frame, to minimize the thickness of the furs.

3.5 LOCATION OF OUTLETS

.1 Place outlets and power outlets in accordance with section 26 05 32 - Output, bypass and accessory boxes indicated.

.2 Do not install outlets and power outlets back-to-back in a wall; leave a horizontal clearance of at least 150 mm between the boxes.

.3 The location of the outlets and sockets may be changed at no additional cost or credit, provided that the displacement does not exceed 3000 mm and that the notice is given before installation.

.4 Place the light switches near the doors, on the side of the handle.

.1 In the premises of mechanical installations and elevator machinery, place the disconnectors near the doors, on the side of the handle.

3.6 MOUNTING HEIGHTS

.1 Unless otherwise specified or required, measure the mounting height of the equipment from the surface of the coated floor to their axis.

.2 In cases where the mounting height is not indicated, check with the competent persons before starting the installation.

.3 Unless otherwise specified, install the equipment at the height indicated below.

.1 Light switches: 1400 mm.

.2 Wall sockets

.1 In general: 300mm.

.2 Above continuous baseboard heaters: 200 mm.

.3 Above a worktop or its backsplash: 175 mm.

.4 In the premises of mechanical installations: 1400 mm.

.3 Distribution panels: according to the requirements of the Code or indications.

.4 Sockets for phones and intercoms: 300 mm.

.5 Sockets for phones and intercoms mounted on the wall: 1500 mm.

.6 Fire alarm stations: 1500 mm.

.7 Fire alarm stamps: 2100 mm.

.8 TV sockets: 300 mm.

.9 Wall-mounted speakers: 2100 mm.

.10 Sockets for clocks: 2100 mm.

.11 Door ringing buttons: 1500 mm.

3.7 CO-ORDINATION OF PROTECTIVE DEVICES

.1 Ensure that circuit protection devices such as overcurrent triggers, relays and fuses are installed, of the required size and set to the required values.

3.8 FIELD QUALITY CONTROL

.1 Load balancing

.1 Measure the phase current of the distribution panels under normal loads (lighting) at the time of receipt of the work. Distribute the connections of the bypass circuits in such a way as to obtain the best balance of the current between the various phases and note the changes made to the original connections.

.2 Measure the phase voltages to the devices and adjust the sockets of the transformers so that the voltage obtained is close to 2% of the nominal voltage of the devices.

.3 Once the measurements have been completed, submit the load balancing report prescribed in THE ARTICLE DOCUMENTS/SAMPLES TO BE SUBMITTED FOR

APPROVAL/INFORMATION, IN PART 1. This report shall indicate the currents of speed under normal loads recorded on the phases and neutrals of the distribution panels, dry transformers and motor control centres. Specify the time and date at which each load was measured, as well as the voltage of the circuit at the time of measurements.

.2 Test the following in accordance with section 01 45 00 - Quality Control.

.1 Electricity distribution network, including phase, voltage and grounding control, and load balancing.

.2 Circuits from bypass panels.

.3 Insulation resistance measurement

.1 Measure, using a 500 V megohmmeter, the isolation value of circuits, distribution cables and devices with a nominal voltage of not more than 350 V.

.2 To measure, using a 1000 V megohmmeter, the isolation value of circuits, arteries, and devices with a nominal voltage between 350 and 600 V.

.3 Check the value of the ground resistance before proceeding with the powering on.

.3 Carry out the tests in the presence of the Departmental Representative and the Consultant.

.4 Provide the measuring devices, indicators, devices, and personnel required to carry out the tests during the execution of the work and at the completion of the work.

.5 On-the-spot checks carried out by the manufacturer

.1 Obtain a written report from the manufacturer confirming the compliance of the work with the specified criteria for handling, implementation, application of products and protection and cleaning of the work and submit this report in accordance with THE DOCUMENTS/SAMPLES TO BE SUBMITTED FOR APPROVAL/INFORMATION section of PART 1.

.2 The manufacturer must make recommendations for the use of the product(s) and conduct periodic visits to verify that the implementation has been carried out according to his recommendations.

3.9 SYSTEM STARTUP

.1 Instruct The Departmental Representative, the Consultant, and the operating staff on the mode of operation and maintenance methods of the installation, its apparatus, and components.

.2 Retain and pay for the services of an engineer seconded from the manufacturer's plant to monitor the start-up of the facility, to verify, adjust, balance, and calibrate the various elements, and to instruct operating personnel.

.3 Provide these services for a sufficient period of time, providing for the number of visits necessary to start up the aircraft and ensure that operating personnel are familiar with all aspects of their maintenance and operation.

3.10 CLEANING

.1 Cleaning during work: perform the cleaning work in accordance with section 01 74 00 - Cleaning.

.1 Leave the premises clean at the end of each working day.

.2 Final cleaning: remove surplus materials/materials, waste, tools, and equipment from the job site in accordance with section 01 74 00 - Cleaning.

.1 Remove recycling bins and dumpsters from the job site and dispose of materials at the appropriate facilities.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

.1 CSA (CSA) Group

.1 CAN/CSA-C22.2 Number 65-F03(C2008), Wire Connectors (trinational standard with UL 486A-486B and NMX-J-543-ANCE-03).

.2 Electrical and Electronic Equipment Manufacturers Association of Canada (AMEEEC)

.1 EEMAC 1Y-2-1961, Connectors for crossing terminals and adapters made of aluminum (rated current 1200 A).

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit the required documents and samples in accordance with section 01 33 00 - Documents/Samples to be submitted.

.2 Product data

.1 Submit the required data sheets as well as the manufacturer's instructions and documentation for connectors for cables and boxes. The data sheets must indicate the characteristics of the products, the performance criteria, the dimensions, the limits, and the finish.

1.3 CLOSEOUT SUBMITTALS

.1 Submit the required documents/items in accordance with section 01 78 00 - Documents/Items to be submitted upon completion of the work.

.2 Operations and Maintenance Data: Provide instructions for the operation and maintenance of cable and box connectors, which will be incorporated into the E&E manual.

Part 2 Products

2.1 MATERIALS

.1 Pressure connectors for cables, conforming to CAN/CSA-C22.2, with current-carrying elements made of copper, copper alloy, aluminum, aluminum alloy, of suitable size for copper, aluminum conductors, as required.

.2 Splicing connectors for lighting fixtures conforming to CAN/CSA-C22.2, with current-carrying elements made of copper, copper alloy, of a size suitable for copper conductors of size 10 AWG or less.

.3 Connectors for crossing terminals that comply with EEMAC 1Y-2, relevant NEMA standards and consist of the following elements.

.1 Connector body and clamping flange for conductor, tube, copper or aluminum bar.

.2 Clamping flange for conductor, tube, copper or aluminum bar.

.3 Clamping flange bolts.

.4 Bolts for conductor or bar made of copper or aluminum.

.5 Suitable size for conductors, tubes, and bars, as indicated.

.4 Clamping flanges or connectors for TECK cable, as required, compliant with CAN/CSA-C22.2.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of conditions: Before proceeding with the installation of connectors for cables and boxes, ensure that the condition of surfaces/supports previously implemented under other sections or contracts is acceptable and allows the work to be carried out in accordance with the manufacturer's written instructions.

.1 Make a visual inspection of the surfaces/supports in the presence of the Representative of the Ministry or the Consultant.

.2 Immediately inform the Ministry Representative or Consultant of any unacceptable conditions detected.

.3 Begin installation work only after correcting unacceptable conditions and receiving written approval from the Ministry Representative or Consultant.

3.2 INSTALLATION

.1 Carefully strip the ends of the conductors and cables and, as appropriate, proceed with the following.

.1 Apply a layer of zinc-based joint paste to the splices of the aluminum cables before laying the connectors.

.2 Install the pressure connectors and tighten the screws using a compression tool recommended by the manufacturer. The installation shall conform to the clamping tests carried out in accordance with CAN/CSA-C22.2

.3 Install and tighten connectors for lighting fixtures in accordance with CAN/CSA-C22.2. Replace the insulating cap.

.4 Install the connectors for crossing terminals in accordance with EEMAC 1Y-2.

3.3 CLEANING

.1 Cleaning during work: perform the cleaning work in accordance with section 01 74 00 - Cleaning.

.1 Leave the premises clean at the end of each working day.

.2 Final cleaning: remove surplus materials/materials, waste, tools, and equipment from the site in accordance with section 01 74 00 - Cleaning.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 26 05 00 - Electricity - General requirements for the results of the work

.2 26 05 20 - Connectors for cables and boxes 0 - 1000 V

.3 26 05 34 – Conduits, Conduit fasteners, and Conduit fittings

.4 26 05 36 - Cable trays for electrical installations

Part 2 Products

2.1 BUILDING WIRES

.1 Conductors: stranded if they are 10 AWG in size or larger; minimum size: 12 AWG.

.2 Copper aluminum conductors: of the indicated size, under cross-linked thermoset polyethylene insulation, for voltage of 600, and of type RW90 XLPE RWU90 XLPE, with envelope.

2.2 TECK 90 CABLE

.1 Cables: in accordance with section 26 05 00 - Electricity - General requirements for the results of the work.

.2 Drivers

.1 Grounding conductor: copper or aluminum, depending on the indications.

.2 Power conductors: copper or aluminum, depending on the indications.

.3 Insulator

.1 Cross-linked polyethylene (XLPE)

.2 Rated voltage: 600.

.4 Sheath: polyvinyl chloride.

.5 Metal armor: aluminum strip.

.6 Outer envelope: made of thermoplastic polyvinyl chloride, which complies with the Building Code requirements for the building class of this project.

.7 Fastenings:

.1 One hole fixing flanges, of aluminium, for exposed cables of 50 mm or less. Two-hole fixing flanges, of steel, for cables larger than 50 mm.

.8 Connectors

.1 Explosion-proof models approved and suitable for TECK cables.

Part 3 Execution

3.1 FIELD QUALITY CONTROL

.1 Test in accordance with section 26 05 00 - Electricity - General requirements for the results of the work.

.2 Test before turning on the electrical installation.

3.2 GENERAL CABLE INSTALLATION

.1 Perform cable terminations in accordance with section 26 05 20 - Connectors for cables and boxes 0 - 1000 V.

.2 Use a cable color code in accordance with section 26 05 00 - Electricity - General requirements for the results of the work.

.3 Parallel feeding arteries should be of the same length.

.4 Attach or clip cables from power arteries to distribution centers, pull boxes, and terminations.

.5 Route downhill or in vertical loops the wiring hidden in the walls, to facilitate subsequent work. Unless otherwise noted, avoid routing wiring from bottom to top as well as horizontally through walls.

.6 Use only two-wire circuits for bypasses to sockets with overvoltage suppression as well as for permanently connected electronic and computer equipment. Common neutral circuits are prohibited.

.7 The control wiring must be identified by collars with numbering corresponding to the legend of the workshop drawings.

3.3 INSTALLATION OF TECK90 CABLES (0 - 1000 V)

.1 Lay the exposed cables by securing them securely by means of flanges or suspension calipers.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 26 05 00 - Electricity - General requirements for the results of the work

1.2 REFERENCE STANDARDS

.1 American National Standards Institute /Institute of Electrical and Electronics Engineers (ANSI/IEEE)

.1 ANSI/IEEE 837-02, IEEE Standard for Qualifying Permanent Connections Used in Substation Grounding.

.2 Groupe CSA (CSA)

.1 CSA Z32-F09, Electrical Safety and Critical Electrical Systems in Healthcare Facilities.

1.3 DELIVERY, STORAGE AND HANDLING

.1 Delivery store and handle materials and equipment in accordance with section 01 61 00 - General Product Requirements and the manufacturer's written instructions.

.2 Delivery and Acceptance: Deliver materials and materials to the job site in their original packaging, which must bear a label indicating the name and address of the manufacturer.

.3 Storage and handling

.1 Store materials and equipment so that they do not rest on the ground, in a clean, dry and well-ventilated place, in accordance with the manufacturer's recommendations.

.2 Store grounding equipment to protect against marks, scratches and scratches.

.3 Replace damaged materials and equipment with new materials and equipment.

Part 2 Products

2.1 EQUIPMENT

.1 Grounding collars: appropriate size, to connect conductors to a groundwater pipe of good electrical conductivity.

.2 Electrode rods: steel, 19 mm in diameter and at least 3 m in length.

.3 Earth conductors: bare copper, twisted, indicated caliber.

.4 Ground conductors under insulation: green, copper, indicated diameter.

.5 Ground bus bars: copper, with insulating supports, fasteners, and connectors.

.6 Anti-corrosion accessories necessary for the grounding system, of types, dimensions, and materials according to the indications, including the accessories below.

.1 Grounding and linking tips.
.2 Protective flanges.
.3 Bolted connectors.
.4 Connectors to be welded by aluminothermy.
.5 Jumpers, braids and connecting bars.
.6 Wire clamp connectors.

Part 3 Execution

3.1 GENERAL INSTALLATION

.1 Install a complete, permanent and continuous grounding system, including the necessary electrodes, conductors, connectors and accessories. When metal electrical tubes (EMT type) are used, pass the grounding conductor through the tubes.

.2 Place the connectors according to the manufacturer's instructions.

.3 Protect grounding conductors laid uncovered from damage.

.4 Using permanent mechanical connectors or controllable, ANSI/IEEE 837 compliant working copper compression connectors, underground connections, electrode connections and connections to a groundwater pipe with good conductivity.

.5 Use mechanical connectors to make connections for devices with ground terminals.

.6 Welded joints are prohibited.

.7 Place a connecting wire on the flexible ducts, carefully fixed on the outside of the duct and connected at one end to a grounding tip, a seamless terminal, a wire clamp, or a screw with Belleville washer.

.8 Place flexible connecting braids at the joints of the shielded bars when the connection is not provided by the material itself.

.9 Connect one end of the metal armor of the single-conductor cables to the power source enclosure and place a non-metallic input plate at the other end to the enclosure on the charging side.

.10 Ground secondary distribution stations.

3.2 MAINTENANCE HOLES (MANHOLES)

.1 Place, in each maintenance manhole(s), an easily accessible threaded earth terminal, an electrode and a cored copper conductor of indicated size.

.2 Install, in each manhole(s) of maintenance, a rod of earth pressed so that the top, equipped with a connecting flange, protrudes from the floor of the manhole (s) of maintenance. Confirm that the ground resistance value meets or exceeds the minimum requirements of the Canadian Electrical Code.

3.3 ELECTRODES

.1 Make the grounding connections on the water pipe, buried and electrically conductive along its entire length, on the street side of the water meter.

.2 Place a bypass on the water meter.

.3 Install electrodes embedded in the concrete of the wheelbases of the foundation of the building, and connect the terminals to the earth network.

.4 Lay the electrode rods and make the indicated grounding connections.

.5 Connect the independent electrodes together.

.6 Use copper conductors of indicated size to make the connection to the electrodes.

.7 Make special arrangements to install the electrodes in such a way as to obtain an acceptable earth resistance value in sandy or rocky terrain. Make the connections according to the indications.

3.4 EQUIPMENT GROUNDING

.1 Make the required grounding connections for all equipment, including connection devices, transformers, switchgear, pipes, engine frames, motor control centers, starters, control panels, steel framing, generators, alternators, elevators and escalators, distribution panels, outdoor lighting network and cable trays.

3.5 GROUNDING BUS

.1 Mount the copper bus bars on insulated supports fixed to the wall of the premises of electrical installations and communication equipment.

.2 Connect the electrical installation space equipment, as well as the IT equipment of the communication equipment room, to the grounding busbar, using individual bare copper, stranded, 2/0 AWG size conductors.

3.6 FIELD QUALITY CONTROL

.1 Test in accordance with section 26 05 00 - Electricity - General requirements for the results of the work.

.2 Verify the continuity and resistance of the grounding network according to methods appropriate to local conditions and approved by the Consultant and the competent local authorities.

.3 Test before turning on the electrical installation.

.4 During testing, disconnect the ground leak indicator.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 26 05 00.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit the required documents and samples in accordance with section 01 33 00 - Documents/Samples to be submitted.

.2 Product data

.1 Submit the required data sheets as well as the manufacturer's documentation regarding the suspensions. The data sheets must indicate the characteristics of the products, the performance criteria, the dimensions, finish, and limitations.

1.3 DELIVERY, STORAGE AND HANDLING

.1 Delivery, store and handle materials and equipment in accordance with section 01 61 00 - General Product Requirements and the manufacturer's written instructions.

.2 Delivery and Acceptance: Deliver materials and materials to the job site in their original packaging, which must bear a label indicating the name and address of the manufacturer.

.3 Storage and Handling Requirements :

.1 Store materials and equipment so that they do not rest on the ground in accordance with the manufacturer's recommendations.

.2 Store to protect against marks and scratches.

.3 Replace defective or damaged materials and equipment with new.

Part 2 Products

2.1 SUPPORT CHANNELS

.1 U-shaped profile brackets, 4 mm x 41 mm, 2.5 mm thick, suspended.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of conditions: Before proceeding with the installation of supports and suspensions, ensure that the condition of surfaces/supports previously implemented under other sections or contracts is acceptable and allows the work to be carried out in accordance with the manufacturer's written instructions.

3.2 INSTALLATION

.1 Subject the material to masonry, ceramic, and plaster surfaces, using nylon dowels.

.2 Subject the material to poured concrete surfaces, using expansion dowels.

.3 Subject the material to hollow masonry walls or suspended ceilings, using finned bolts.

.4 Attach the protruding mounted material to the T-profiles of the frame of the suspended ceilings, using twisted staples. Before installing the prescribed equipment, ensure that the suspension of the T-profiles is robust enough to support the weight.

.5 Support ducts or cables with staples, spring bolts and cable ties designed as accessories for U-profiles.

.6 Use strip to secure exposed cables or conduits to the structure or building elements of the building.

- .1 Strips with one (1) malleable iron hole for protruding ducts and cables of 50 mm in diameter or less.
- .2 Strips with two (2) steel holes to fix ducts and cables larger than 50 mm in diameter.
- .3 Use clamping flanges to attach ducts to exposed steel structural elements.

.7 Suspended support systems

- .1 Support each cable or conduit by means of threaded rods 6 mm in diameter and spring staples.
- .2 Support at least two (2) cables or conduits on U-profiles supported by threaded suspension rods 6 mm in diameter, when it is impossible to attach them directly to the building frame.

.8 To protrude two or more ducts, use U-shaped profiles placed at 2 m centre distance.

.9 Install consoles, frames, hooks, clamping flanges and other types of metal supports in the indicated places and where necessary to support ducts and cables.

.10 Provide a suitable support for pipes and cables laid vertically, without wall mounting, up to the material.

.11 Do not use ligation wire or perforated strip to support or secure pipes or cables.

.12 Do not use as a conduit or cable carrier supports and equipment installed for other trades, unless permission has been obtained from them and the approval of the Departmental Representative

.13 Install fasteners and brackets according to the needs of each type of hardware, duct, and cable and according to the manufacturer's recommendations.

3.3 CLEANING

.1 Cleaning during work: perform the cleaning work in accordance with section 01 74 00 - Cleaning.

.1 Leave the premises clean at the end of each working day.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

.1 CSA Group (CSA)

.1 CSA C22.1:21, Canadian Electrical Code, Part I, 25th Edition.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit the required documents and samples in accordance with section 01 33 00 - Documents and samples to be submitted.

1.3 DELIVERY, STORAGE AND HANDLING

.1 Delivery, store and handle materials and materials in accordance with section 01 61 00 - General Product Requirements.

Part 2 Products

2.1 GENERAL OUTLET AND CONDUIT BOXES

.1 Boxes of dimensions in accordance with CSA C22.1

.2 Output boxes of at least 102 mm side, as required.

.3 Boxes grouped when several small devices are installed in the same place.

.4 Full lids for boxes without small equipment.

2.2 GALVANIZED STEEL OUTLET BOXES

.1 Single-piece boxes in electrogalvanized steel.

.2 Bypass boxes of at least 102 mm x 54 mm x 48 mm, for connection to projecting mounted EMT tubes.

.3 Square output boxes of 102 mm side, or octagonal, for outputs of lighting fixtures.

2.3 MASONRY BOXES

.1 Electro-galvanized steel floor boxes, waterproof with concrete grout, with adjustable finish collar, with a solid brass front plate, brushed aluminum. Mounting plate to

2.4 ACCESSORIES - GENERAL

.1 Tips and connectors with nylon insulating collar.

.2 Breakable plugs, to prevent debris from entering.

.3 Access connections for ducts up to 35 mm in diameter, and draft boxes for larger ducts.

.4 Double counter nuts and insulated sleeves on metal sheet boxes.

Part 3 Execution

3.1 INSTALLATION

.1 Secure the boxes so that they are supported independently of the ducts connected to them.

.2 In the case of outlet boxes laid from flush with the finished wall, use plastering frames to allow the edges of the wall covering to be made 6 mm or less from the opening.

.3 The openings in the boxes must be of dimensions corresponding to those of the connections of the ducts, the mineral insulation cables, and the reinforced cables. It is forbidden to use reduction washers.

.4 Vacuum the inside of the output boxes before installing the small equipment.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

.1 CSA (CSA) Group

.1 CAN/CSA-C22.2 Number 18-F98(C2003), Outlet Boxes, Duct Boxes, Fittings and Accessories, National Standard of Canada.

.2 CSA C22.2 Number 45-FM1981(C2003), Rigid Metal Conduits.

.3 CSA C22.2 number 56-04, Flexible metal conduits and flexible metal conducts impervious to liquids.

.4 CSA C22.2 No. 83-FM1985(C2003), Electrical Metal Tubes.

.5 CSA C22.2 No. 211.2-FM1984(C2003), Rigid conduits of unplasticized polyvinyl chloride.

.6 CAN/CSA-C22.2 No. 227.3-05, Non-Metallic Mechanical Protective Tubes (NMDWT), National Standard of Canada.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit the required documents and samples in accordance with section 01 33 00 - Documents and samples to be submitted.

.2 Product data: Submit the required data sheets, as well as the manufacturer's specifications and documentation for the affected products.

.1 Submit the manufacturer's documentation for the covered cables.

.3 Quality Assurance Submittals:

.1 Test Report: Submit test reports issued by recognized independent laboratories.

.2 Certificates: submit documents signed by the manufacturer, certifying that the products, materials, and materials meet the requirements for physical characteristics and performance criteria.

.3 Instructions: Submit installation instructions provided by the manufacturer.

Part 2 Products

2.1 CONDUITS

.1 Rigid PVC Conduits, when indicated: conform to CSA C22.2

2.2 CABLE AND REELS

.1 1-hole fixing flanges, of steel, for securing exposed conduits with a nominal diameter equal to or less than DN 2.50 mm.

.1 Flanges with 2 holes, made of steel, for fixing conduits with a nominal diameter greater than DN 2.50 mm.

.2 U-shaped stirrups to support several conduits, to be placed at 2 m of spacing.

.3 Threaded rods 6 mm in diameter to retain the suspension calipers.

2.3 CONDUIT FITTINGS

.1 Fittings: Conform to CAN/CSA C22.2, specially manufactured for prescribed conduits. Coating: the same as conduit.

.2 Prefabricated L-fittings, to be installed where 90-degree elbows are required on conduits of DN 1, 25 mm and more.

2.4 EXPANSION FITTINGS FOR RIGIT CONDUIT

.1 Weather-resistant expansion fittings, which can withstand a linear expansion of 100, 200 mm, and ensure the continuity of the grounding network.

.2 Watertight expansion connections, which can withstand linear expansion and deformation of 19 mm, and ensure the continuity of the grounding network.

.3 Expansion fittings that are weather-resistant and allow linear expansion conduits at the entrance of the enclosures.

2.5 FISH CORD

.1 Made of polypropylene.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: Comply with the manufacturer's written requirements, recommendations, and specifications, including any available technical bulletins, instructions for handling, storing and installing products, and indications in data sheets.

3.2 INSTALLATION

.1 Place the exposed conduits so as not to reduce the clear height of the room and using as little space as possible.

.2 Install conduits in applies, unless otherwise indicated.

.3 Use rigid PVC conduits.

.4 Use explosion-proof flexible fittings for explosion-proof motor connections.

.5 Install sealing fittings on conduits installed in hazardous places.

.1 Fill them with sealant.

.6 The threading of the rigid conduits, carried out on the construction site, must be of sufficient length to allow tight joints to be made.

.7 Install a draft wire in empty conduits.

.8 From each installed flush panel, raise to the ceiling void, and down to the floor void, two reserve conduits of DN 1.25 mm.

.1 The conduits shall end up in junction boxes of 152 mm x 152 mm x 102 mm housed in the ceiling; in the case of an exposed concrete slab, they must end up in boxes embedded in the slab, mounted protruding on the slab.

.9 Remove and replace clogged conduit parts.

.1 It is forbidden to use liquids to unclog the conduits.

.10 Dry the conduits before passing the wiring.

3.3 SURFACE CONDUITS

.1 Install conduits parallel or perpendicular to the building's siting lines.

.2 Run conduits through the wing of the steel frame elements, if applicable.

.3 Where possible, group the conduits in wall-mounted U-suspension calipers.

.4 Unless otherwise specified, the conduits must not pass through the framing elements.

.5 In the case of conduits placed parallel to steam or hot water pipes, provide for a lateral clearance of at least 75 mm; also provide for a clearance of at least 25 mm in the case of crossings.

3.4 CONDUITS IN CAST-IN-PLACE CONCRETE

.1 Consider the arrangement of steel rebar.

.1 Install conduits in the central third of the slabs.

.2 Protect conduits at their exit point from a concrete structure.

.3 Install sleeves where conduits pass through a slab or wall.

.4 Before covering a concrete structure with a water-repellent membrane, install oversized sleeves where the conduits must pass through it.

.1 Apply putty (cold) between sleeves and conduits.

.5 The thickness of the slabs in which conduits are embedded must correspond to at least four times the diameter of the latter.

.6 Completely drown the conduits under a layer of concrete at least 25 mm thick.

.7 Arrange the conduits in the slabs so that there are as few crossings as possible.

3.5 CONDUITS IN CAST-IN-PLACE SLABS ON GRADE

.1 Run the conduits of DN 1, 25 mm and more under the slabs and drown them in a concrete envelope 75 mm thick.

.1 Place a layer of sand 50 mm thick on the concrete envelope under the floor slab.

3.6 UNDERGROUND CONDUITS

.1 Install sloping conduits to ensure water drainage.

.2 Waterproof joints (PVC excepted) with heavy coat of bituminous paint.

3.7 CLEANING

.1 Perform cleaning work in accordance with section 01 74 00 - Cleaning.

.2 Once installation work and performance monitoring are complete, remove surplus materials and materials, waste, tools, and equipment from the site.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 26 05 00 - Electricity - General requirements for the results of the work

1.2 DELIVERY, STORAGE AND HANDLING

.1 Delivery, store and handle materials and equipment in accordance with section 01 61 00 - General Product Requirements and the manufacturer's written instructions.

.2 Delivery and Acceptance: Deliver materials and materials to the job site in their original packaging, which must bear a label indicating the name and address of the manufacturer.

Part 2 Products

2.1 CABLE PROTECTION

.1 38 mm x 140 mm planks treated under pressure with a water-repellent preservative consisting of a transparent solution of copper naphthenate.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of conditions: Before installing the cables, ensure that the condition of the surfaces/supports previously implemented under other sections or contracts is acceptable and allows the work to be carried out in accordance with the manufacturer's written instructions.

- .1 Make a visual inspection of the surfaces/supports in the presence of the Consultant.
- .2 Immediately inform the Consultant of any unacceptable conditions detected.
- .3 Begin installation work only after correcting unacceptable conditions and receiving written approval from the Departmental Representative.

3.2 CABLE INSTALLATION IN DUCTS

.1 Lay the cables in the ducts, as indicated.

.2 It is forbidden to pull spliced cables into the ducts.

.3 Lay all cables passing through the same pipe simultaneously.

.4 To reduce draft tension, use CSA-approved lubricants that are compatible with the outer shell of the cable

.5 To make it easier to match color-coded multi-conductor control cables, always unwind them in the same direction during installation.

.6 Before pulling the cables into the ducts, and until they are permanently connected, seal the ends of the lead-sheathed cables by means of wiping solder, and those of the other cables, by means of a water-repellent sealing tape.

.7 Once the cables are finished, seal the ends of the ducts with a product designed for sealing the ducts.

3.3 FIELD QUALITY CONTROL

.1 Test in accordance with section 26 05 00 - Electricity - General requirements for the results of the work.

.2 Entrust the execution of the tests to competent personnel.

.1 Provide the necessary instruments and equipment.

.3 Check the order of the phases and individually identify the conductors of each phase of each supply artery.

.4 Check the continuity of all feeding arteries; ensure that they are free of short circuits and ground leaks.

.1 Ensure that the resistance between the earth and each circuit is not less than 50 megohms.

.5 Pre-acceptance tests.

.1 After laying the cables, but before splicing and connecting, measure the insulation resistance of each phase conductor, using a 1000 V megohmmeter.

.2 After performing each splice and/or connection, check the strength of the insulation to ensure that the cable network is ready for acceptance testing.

.6 Acceptance tests

.1 Ensure that all terminations and ancillary hardware are unplugged.

.2 Ground armor, earth wires, metal armor and conductors not tested.

.3 Dielectric stiffness tests

.1 Perform dielectric stiffness tests in accordance with the manufacturer's recommendations.

.4 Leakage current test

.1 Increase the voltage in steps from 0 to the maximum value prescribed by the manufacturer for the type of cable being tested.

.2 Maintain the maximum voltage for the duration prescribed by the manufacturer.

.3 Note the value of the leakage current at each rung.

.7 Provide the Consultant with a list of test results indicating the location of each test point, the circuit tested and the result of each test.

.8 Remove and completely replace any length of cable that does not meet the test criteria.

3.4 CLEANING

.1 Cleaning during work: perform the cleaning work in accordance with section 01 74 00 - Cleaning.

3.5 PROTECTION

.1 Repair damage to adjacent materials and equipment caused by cable installation.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 26 05 00 - Electricity - General requirements for the results of the work

.2 26 28 16.02 - Circuit breakers under molded housing

1.2 REFERENCE STANDARDS

.1 Groupe CSA (CSA)

.1 CSA C22.2 Number 29-11, Distribution Panels and Distribution Panels in Boxes.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit the required documents and samples in accordance with section 01 33 00 - Documents/Samples to be submitted.

.2 Product data

.1 Submit the required data sheets as well as the manufacturer's instructions and documentation for the distribution panels. The data sheets must indicate the characteristics of the products, the performance criteria, the dimensions, finish, and limitations.

.3 Shop drawings

.1 Workshop drawings submitted must bear the seal and signature of a competent engineer recognized or authorized to practice in the province of Quebec, Canada.

.2 Indicate the following on the drawings.

.1 The electrical characteristics of the panels, the number, type and size of the bypass circuit breakers, and the dimensions of the enclosure.

1.4 CLOSEOUT SUBMITTALS

.1 Submit the required documents/items in accordance with section 01 78 00 - Documents/Items to be submitted upon completion of the work.

.2 Operations and Maintenance Sheets: Provide instructions for the operation and maintenance of the distribution panels, which will be incorporated into the E&E manual.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Delivery, store and handle materials and equipment in accordance with section 01 61 00 - General Product Requirements and the manufacturer's written instructions.

.2 Delivery and Acceptance: Deliver materials and materials to the job site in their original packaging, which must bear a label indicating the name and address of the manufacturer.

.3 Storage and handling

.1 Store materials and equipment so that they do not rest on the floor indoors in a dry, clean, dry and well-ventilated area, as recommended by the manufacturer.

.2 Store distribution panels to protect them from marks, scratches and scratches.

.3 Replace damaged materials and equipment with new materials and equipment.

Part 2 Products

2.1 PANELBOARDS

.1 Distribution panels: CSA C22.2 compliant. All distribution panels must come from a single manufacturer.

.1 Circuit breakers must be installed in the panels before delivery to the site.

.2 The manufacturer's nameplates shall indicate, in addition to the data required by the CSA, the fault current that the panel and circuit breakers can withstand

.2 240 V panels, fault current of bus bars, 22 kA (symmetrical); circuit breakers shall have a nominal cut-off power of 22 kA (symmetrical) or as indicated.

.3 Make connections so that odd-number circuits are powered by the left bar, and even-numbered circuits by the right bar. Each circuit breaker must bear the permanent identification of the circuit number and phase.

.4 Distribution panels: nominal intensity, numbers and gauges of bypass circuit breakers as indicated.

.5 At least two (2) installed flush locking devices per distribution panel.

.6 All distribution panels must have the same type of lock. Provide two (2) keys for each panel.

.7 Aluminum bus bars; neutral bar of the same permissible intensity as the phase bars.

.8 Bus bars that can accommodate bolted circuit breakers.

.9 Door frame of the panels with bolts and hinges concealed.

.10 Door and door frame coated with baked enamel paint.

.11 Grounding busbar, isolated.

.12 Include a grounding busbar with three (3) terminals to bind the conductor corresponding to the capacity of the distribution panel circuit breakers.

2.2 BREAKERS

.1 Circuit breakers in accordance with section 26 28 16.02 - Circuit breakers under molded housing.

.2 Unless otherwise specified, distribution panels shall be equipped with thermomagnetically triggered circuit breakers.

.3 Equip circuit breakers, fire alarm, emergency lighting, door monitoring, output light indicators with locking devices.

2.3 EQUIPMENT IDENTIFICATION

.1 Equipment identified in accordance with section 26 05 00 - Electricity - General requirements for the results of the work.

.2 Indicator plates of format 2 for each panel. Coordinate the indication with the ministry representative.

.3 Complete nomenclature of circuits, with typed legend indicating the location and load of each circuit, in a plastic envelope on the inner side of the panel door.

.4 Circuits serving patient care areas must be entered in the nomenclature of circuits in bold type.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of conditions: Before proceeding with the installation of distribution panels, ensure that the condition of surfaces/supports previously implemented under other sections or contracts is acceptable and allows the work to be carried out in accordance with the manufacturer's written instructions.

.1 Make a visual inspection of the surfaces/supports in the presence of the Consultant.

.2 Immediately inform the Consultant of any unacceptable conditions detected.

.3 Begin installation work only after correcting unacceptable conditions and receiving written approval from the Consultant.

3.2 INSTALLATION

.1 Install the panels in the indicated places, securely, plumb, square and alignment with contiguous surfaces.

.2 Mount the protruding distribution panels on a plywood fastening panel with gray fireproof paint, when in a building. Whenever possible, group the distribution panels on a common fastening panel.

.3 Mount the distribution panels to the height prescribed in section 26 05 00 - Electricity - General requirements for the results of the work or to the height indicated.

.4 Connect all circuits to the load elements.

.5 Connect the neutral conductors to the common neutral busbar.

.6 When panels from different systems (i.e., Standard and Vital Power) serve a common patient care area, the grounding busbars in the panels must be interconnected with a ground conductor with a size of at least 6 AWG.

3.3 CLEANING

.1 Cleaning during work: perform the cleaning work in accordance with section 01 74 00 - Cleaning.

.1 Leave the premises clean at the end of each working day.

.2 Final cleaning: remove surplus materials/materials, waste, tools, and equipment from the site in accordance with section 01 74 00 - Cleaning.

3.4 PROTECTION

.1 Protect equipment and installed elements from damage during construction work.

.2 Repair damage to adjacent materials and equipment caused by the installation of distribution panels.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

.1 CSA Goup (CSA)

.1 CSA C22.2 No. 5-[09], Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures (norme trinationale avec UL 489 et NMX-J-266-ANCE-2010).

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit the required documents and samples in accordance with section 01 33 00 - Documents/Samples to be submitted.

.2 Product data

.1 Submit the required data sheets as well as the manufacturer's instructions and documentation for [circuit breakers]. The data sheets must indicate the characteristics of the products, the performance criteria, the dimensions, the limits and the finish.

.3 Include current-time characteristic curves for circuit breakers [with a permissible current of 35 kA or more, at the mains voltage.

.4 Certificates:

.1 Prior to the installation of circuit breakers in a new or existing installation, the Contractor must provide [three (3)] copies of a manufacturer's Certificate of Origin of Production. This certificate must be duly signed by a representative of the plant and the local manufacturer, to certify that the circuit breakers come from that manufacturer and that they are new and comply with standards and regulations.

.1 The certificate of origin of the production must be submitted to the Consultant for approval.

.2 Submitting the Certificate of Origin late will not justify any extension of the contract term or additional compensation.

.3 Manufacturing, assembly, and installation must begin only after the Consultant has accepted the certificate of origin of production. If this requirement is not met, the Consultant reserves the right to mandate the manufacturer indicated on the circuit breakers to authenticate the new circuit breakers under the contract, at the Contractor's expense.

.4 The certificate of origin of the production must contain the following information.

.1 The name and address of the manufacturer, and the name of the person responsible for authentication. This person must sign and date the certificate.

.2 The name and address of the authorized distributor, and the name of the person responsible, at the distributor, for the Contractor's account.

.3 The name and address of the Contractor, and the name of the person responsible for the project.

.4 The name and address of the local manufacturer's representative. The latter must sign and date the certificate.

.5 The name and address of the building where the circuit breakers will be installed.

.1 Project title: [_____].

.2 End User Reference Number: [____].

.3 List of circuit breakers: [_____].

1.3 DELIVERY, STORAGE AND HANDLING

.1 Delivery, store and handle materials and equipment in accordance with section 01 61 00 - General Product Requirements and the manufacturer's written instructions.

.2 Delivery and Acceptance: Deliver materials and materials to the job site in their original packaging, which must bear a label indicating the name and address of the manufacturer.

.3 Storage and Handling Requirements:

.1 Store circuit breakers so that they do not rest on the floor inside in a dry, clean, dry and well-ventilated area, as recommended by the manufacturer.

.2 Store [circuit breakers] in such a way as to protect them from [marks, scratches and scratches].

.3 Replace damaged materials and equipment with new materials and equipment.

Part 2 Products

2.1 GENERAL REQUIREMENTS

.1 Circuit breakers under molded housing: compliant with CSA C22.2

.2 Circuit breakers under molded housing, bolted to bus bars: of the type with quick closing and sudden break, with manual and automatic maneuvers, with compensation for ambient temperature of 40 degrees Celsius.

.3 Circuit breakers with instantaneous magnetic triggers, acting only when the current reaches the setting value.

.1 Circuit breakers with triggers that can be set between [3 and 8] times the rated current.

.4 Circuit breakers shall have a cut-off power of at least 22 kA balanced and effective.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of conditions: Before proceeding with installation, ensure that the condition of surfaces/supports previously implemented under other sections or contracts is acceptable and allows the work to be carried out in accordance with the manufacturer's written instructions.

.1 Make a visual inspection of the surfaces/supports in the presence of the Consultant's Representative.

.2 Immediately inform the Consultant of any unacceptable conditions detected.

.3 Begin installation work only after correcting unacceptable conditions and receiving written approval from the Consultant.

3.2 INSTALLATION

.1 Install circuit breakers as directed.

3.3 CLEANING

.1 Cleaning during work: perform the cleaning work in accordance with section 01 74 00 - Cleaning.

.1 Leave the premises clean at the end of each working day.

.2 Final cleaning: remove surplus materials/materials, waste, tools, and equipment from the site in accordance with section 01 74 00 - Cleaning.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Not Used.

1.2 REFERENCE STANDARDS

.1 ASTM International (ASTM)

.1 ASTM D 4791-10, Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate.

.2 Bureau de normalisation du Québec (BNQ)

.1 Civil engineering works – Granulates BNQ 2560-114 (2014).

.2 Soils – Size Analysis of Inorganic Soils – BNQ 2501-025

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit the required documents and samples in accordance with section 01 33 00 - Documents/Samples to be submitted.

.2 The Contractor must indicate to the Departmental Representative the place (or places) where the various aggregates he intends to use are located. The Contractor must certify, by submitting supporting test or analysis reports, not more than one year old, that the characteristics of the aggregates comply with the requirements of document BNQ 2560-114 and must indicate the value of each characteristic. The Departmental Representative may take samples of aggregates, at the source or from manufacturing plants, to verify their characteristics by laboratory tests.

.3 If class « B » backfill is imported does not come from a commercial pit the Contractor should indicate the source to the Departmental Representative and present chemical analytical report for the following parameters : Metals (Ag, As, Ba, Cd, Co, Cr, Cu, Sn, Mn, Hg, Mo, Ni, Pb, Se and Zn), VOC, PAH, Petroleum Hydrocarbon with chromatographs. The certificate should be less then four (4) months old. The backfill should respect the CCME's agricultural and environment protection recommendations and the background level of the geological province of Basses-Terres-du-Saint-Laurent.

1.4 SUPPLIED MATERIAL

.1 Following the dismantlement of the existing pipes and accessories from the absorption field the Contractor may reused the soil if they are respecting the granulometric specifications. Testing should be paid by the Contractor.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Transport, store and handle materials and equipment in accordance with section 01 61 00 - General Product Requirements.

.2 Transport and handling: transport and handle aggregates in a manner that prevents segregation, contamination, and degradation.

Part 2 Products

2.1 MATERIALS

.1 Characteristics of aggregates: good quality, hard, resistant, free of platelets, needles, soft or laminated particles, organic materials, clay clods, minerals, adherent films, harmful amounts of disintegrated pieces or other harmful substances.

.2 Platelets and needles, in the case of large aggregates: as specified in ASTM D 4791

.1 Elements whose largest face is at least five (5) times larger than the smallest. (Verify with geotechnics if required)

.3 Fine aggregates meeting the requirements of the relevant section shall consist of one of the following materials or a mixture thereof.

.1 Screenings from the crushing of quarry blocks, boulders, gravel, or slag.

.4 Large aggregates meeting the requirements of the relevant section shall consist of one of the following materials or a mixture thereof.

.1 Crushed rock.

.2 Gravel and crushed gravel composed of naturally formed particles of stone.

.5 Rip Rap

.1 The stonework must meet the requirements of category 5 of large aggregates according to the BNQ 2560–114 standard "Civil engineering work – Aggregates".

.2 Granular material with a specific particle size to prevent contamination and ensure the flow of water.

.3 Be angular in shape and with sharp edges.

.4 Clean, hard, and durable: Free of dust, harmful or deleterious particles. Resistant in the long term. No signs of deterioration.

.5 Free from alteration: Absence of minerals (iron sulphides, mica inclusions, pegmatite, chlorite, and other alterations) in the stone likely to be affected by weathering or at the time of its implementation.

.6 Free of all recycled comers: Concrete, asphalt and other prohibited.

.7 Free of gelling materials: Absence of stone constituents that can fragment under the effect of frost and sudden temperature differences. (e.g. shale, argillite, slate shale, phyllade, clay limestone, clay dolomite, sandstone, clay sandstone, clay pelitis and other variations of these constituents are to be avoided).

.6 Pipe bedding and surround

.1 The granular must comply with the specifications

.1 CG 14 according to BNQ 2560-114 (2014).

.1 Sieve 20 mm: 100%.

.2 Sieve 5 mm: 35-100%.
.3 Sieve 80 µm: 0-10%..

.2 CG 14b.
.1 Sieve 20 mm: 100%.
.2 Sieve 5 mm: 35-100%.
.3 Sieve 80 µm: 0-15%..

.3 Optional work - replacing the CG-14 or CG-14b stone crushed 20 mm with geotextile Type III (BNQ: standardized grade S1-F2)
.1 Sieve 31.5 mm: 100%
.2 Sieve 20 mm: XX %
.3 Sieve 80 µm: 0-10%.

.7 Foundation, sub-foundation and roll layer materials

.1 MG 20 according to BNQ 2560-114 (2014)
.1 Sieve 31.5 mm: 100%
.2 Sieve 20 mm: 90-100%
.3 Sieve 14 mm: 68.93%.
.4 Sieve 5 mm: 35-60%.
.5 Sieve 1.25 mm: 15-38%.
.6 Sieve 315 µm: 5-17%.
.7 Sieve 80 µm: 0-10%.

.2 MG 56 according to BNQ 2560-114 (2014)
.1 Sieve 80 mm: 100%
.2 Sieve 56 mm: 82-100%
.3 Sieve 31.5 mm: 55-85%
.4 Sieve 5 mm: 25-50%.
.5 Sieve 1.25 mm: 11-30%.
.6 Sieve 315 µm: 4-18%.
.7 Sieve 80 µm: 2-7%.

.3 Class B: Class "B" borrowed material is a compactable material with a maximum of 20% sifting 80 µm that does not contain organic soils or blocks and pebbles with a diameter greater than 250 mm.

2.2 SOURCE QUALITY CONTROL

.1 Inform the Departmental Representative of proposed source of supply for the aggregates and provide access for sampling purposes at least four (4) weeks before starting production.

.2 If materials from proposed source of supply do not meet the prescribed requirements or cannot reasonably be processed to meet them, locate alternative source.

.3 Advise the Departmental Representative two (2) weeks minimum in advance of proposed change of material source.

.4 Acceptance of material at source does not preclude future rejection if it fails to conform to requirements specified, lacks uniformity, or if its field performance is found to be unsatisfactory.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of conditions: verify that conditions are acceptable for topsoil removal.

.1 Visually inspect the surfaces/supports in the presence of the Departmental Representative.

.2 Inform the Departmental Representative of any unacceptable conditions detected.

3.2 PREPARATION

.1 Stockpillng

.1 Unless otherwise indicated by Departmental Representative, the aggregates may be piled up on the site. The contractor must determine the ideal location himself with the authorization of the Departmental Representative.

.2 Aggregates must be piled on level and well-drained soils, with sufficient lift and stability to support the piled materials and handling equipment.

.3 To avoid mixing aggregates, space the piles of different aggregates sufficiently or separate them by means of sturdy, full-height partitions.

.4 It is forbidden to use mixed or contaminated materials. Remove discarded materials within 48 hours of refusal, as directed by the Departmental Representative.

.5 Unload the aggregates pile by truck and place into uniform piles and shape in accordance with the requirements.

.6 It is forbidden to mount cone piles or to drop materials on either side of the piles.

.7 Do not use stacker conveyors.

.8 During winter work, prevent ice and snow from mixing with materials that are being piled up or extracted from the pile.

3.3 OPTIONAL WORK

.1 Following the authorization of the Departmental Representative, in replacement of the Pipe bedding and surround , the pipes may be installed on a bed of net stone coated with geotextile type III (BNQ: standardized grade S1-F2).

3.4 CLEANING

.1 Cleaning during work: perform the cleaning work in accordance with section 01 74 00 - Cleaning.

.1 Leave the premises clean at the end of each day.

.2 Final cleaning: upon completion remove surplus materials, rubbish, tools, and equipment in accordance with Section [01 74 00 - Cleaning].

.3 Leave aggregate stockpile site in tidy, well drained condition, free of standing surface water.

.4 Leave any unused aggregates in neat compact stockpiles as directed by the Departmental Representative

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

1.2 Section 31 23 33.01 - Excavation, Trenching and Backfilling.

1.3 REFERENCE STANDARDS

.1 Not Used

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

.1 Implement temporary means to control erosion and sediment deposition to prevent soil loss that may result from stormwater runoff or wind erosion, and the training of this soil on adjacent pedestrian properties and pathways. These means must be in accordance with the indications of the site-specific environmental protection plan, as set out in section 01 35 43 – Environmental Protection.

.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 Remove topsoil before construction procedures begins to avoid compaction of topsoil. Make sure to use a bucket that limits mixing with the underlying.

.1 Under the supervision of the Departmental Representative, segregate the plant stratum containing rhizomes and seeds, set aside and protect the rhizomes from drying out.

.2 Topsoil around the former sewage treatment field will need to be characterized as described in the

.3 Handle topsoil only when it is dry and warm.

.4 Deposit topsoil by building piles at locations approved by the Departmental Representative

.5 No topsoil currently in place will be disposed off-site

.6 Store topsoil in order not to damage existing vegetation during placement and finishing leveling.

.7 Protect topsoil piles from erosion, contamination, and compaction.

3.3 SOILS LOCATED IN THE TREATMENT FIELD

.1 Soils located around the sewage field have been the subject of an environmental characterization. Guidelines on soil reuse are described in section 31 23 33.01 - Excavation, Trenching and Backfilling. They can be pickled and stacked separately from topsoil.

3.4 CLEANING

.1 Perform in accordance with section 01 74 00 - Cleaning.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 31 05 16 – Aggregate Materials

.2 31 14 13 – Soil Stripping And Stockpiling

.3 31 32 19.16 – Geotextile Soil Stabilization

.4 33 31 23 – Sanitary Sewerage Force Mains Piping

1.2 DEFINITIONS

.1 Excavation classes: two classes of excavation will be recognized; common excavation and rock excavation.

.1 Rock cuttings: a solid mass with a volume greater than 1.00 m^3, which cannot be removed by means of a mechanical excavator equipped with a bucket of 0.95 to 1.15 m^3. Frozen materials are not classified as rock.

.2 Ordinary excavated material: all excavation materials of any kind, other than rock cuttings.

.2 Unclassified excavated material: 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 Any material reasonably free of basement materials, clay clods, brush, noxious weeds, and other debris, and free of pebbles, stumps, roots, and other harmful materials greater than 50 mm.

.4 Waste materials: Excavated material unsuitable for use in Work or surplus to requirements.

.5 Borrowed materials: 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 materials: 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 Most susceptible materials:

.1 Fine-grained soil with a plasticity index of less than 10, according to ASTM D4318, and a particle size within the prescribed limits, according to ASTM D422. The designation of sieves shall be in accordance with CAN/CGSB-8.2.

.2 Coarse-grained soil with a sieve percentage passing the sieve of 0.075 mm greater than 20% by mass.

.8 Dimensionally stabilized filling materials: a very low-strength mixture of cement, concrete aggregates, and water, which will not settle once installed in the trenches intended to receive the utility pipes, and which can be excavated without prior preparation.

1.3 REFERENCE STANDARDS

.1 ASTM International (ASTM)

.1 ASTM C 117-17, Standard Test Method for Material Finer than 0.075 mm (No.200) Sieve in Mineral Aggregates by Washing.

.2 ASTM C 136-19, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

.3 ASTM D 1557-12 (2021), Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft ^{3}) (2,700 kN-m/m ^{3}).

.4 ASTM D 4318-17e1, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

.2 ‘’Bureau de normalisation du Québec (BNQ)’’

.1 CAN/BNQ 2501–255 "Soils – Determination of the water content-dry density relationship – Test with modified compaction energy (2700 kN • m/m^3)

.3 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-8.1-88, Wire mesh control sieve, non-metric.

.2 CAN/CGSB-8.2-M88, Wire mesh control sieve, metric.

.4 CSA Group (CSA)

.1 CAN/CSA-A3000-F18, Compendium of Binding Materials (Contains A3001, A3002, A3003, A3004 and A3005).

.2 CSA-A23.1:19/A23.2:19, Concrete: constituents and execution of work/test methods and standard practices for concrete.

.3 Government of Canada

.1 Laws of Canada

.5 Government of Canada

.1 Laws of Canada

.1 Canadian Environmental Protection Act, 1999 (S.C. 1999, c. 33)

.6 Provincial Jurisdiction - Government of Quebec

.1 ‘’Recueil des Lois et règlements du Québec (R.L.R.Q) ‘’, versions of Novembre 30, 2017:

.1 Environment Quality Act (R.L.R.Q., chapter Q-2)

.2 Regulation respecting the burial of contaminated soil (R.L.R.Q., chapter Q-2, r. 18)

.3 Regulation respecting the burial and incineration of residual materials (R.L.R.Q., chapter Q-2, r. 19)

.4 Regulation respecting hazardous materials (R.L.R.Q., chapter Q-2, r. 32)

.5 Regulation respecting the protection and rehabilitation of land (R.L.R.Q., chapter Q-2, r. 37)

.6 Regulation respecting the storage and transfer centers of contaminated soil (R.L.R.Q., chapter Q-2, r. 46)

.7 Regulation respecting the transportation of dangerous goods R.L.R.Q.C-24.2, r.43.

.8 Regulation respecting the traceability of excavated contaminated soil (RCTSCE) R.L.R.Q. chapter Q-2, r. 47.01.

.2 Management of contaminated soils

.1 Intervention Guide – Soil Protection and Rehabilitation of Contaminated Land (MELCC, 2016);

.2 Ministère du Développement durable, de l'Environnement et des Parcs du Québec: Sampling guide for environmental analysis: Workbook 5 – Soil sampling, 2010;

.3 Ministère du Développement durable, de l'Environnement, de la Faune et des Parcs du Québec, Conservation methods for soil sampling, 2013

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit the required documents and samples in accordance with section 01 33 00 – Submittal Procedures

.2 Documents/samples to be submitted before the work at least 10 days before the work

.1 Notice of site opening at the CNESST.

.3 Documents/samples to be submitted at least 1 week in advance before use

.1 Source of materials (granular) as specified in section 31 05 16 - Aggregate for earthworks.

.4 Documents/samples to be submitted at least 10 days after the work

.1 Notice of site closure at the CNESST.

1.5 QUALITY ASSURANCE

.1 Certificate of Competency: Submit a document proving that an insurance policy has been provided for in professional liability.

.2 Health and safety

.1 Take the necessary health and safety measures in construction in accordance with section 01 35 29.06 - Health and Safety.

1.6 PRODUCTS SUPPLIED

.1 The environmental quality of the soils of the existing sewage field was verified. It will be possible to reuse them for backfilling work on the site following the removal of accessories and pipes from the wastewater treatment system. Soils in the treatment field may be reused as recycled backfill materials or as aggregate in accordance with section 31 05 16. Prior to their reuse, their geotechnical quality must be verified by laboratory tests by the Contractor.

1.7 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling.

1.8 EXISTING CONDITIONS

.1 Public utilities

.1 Before starting the work, check the location of the utility pipes located on or near the site.

.2 Make the necessary arrangements with the competent authorities to reroute buried pipes likely to interfere with the execution of the work and assume the costs of this work. Details relating to the dimensions, location, and depth of burial of utility structures and pipes are given for information purposes only and are therefore not necessarily accurate or complete.

.3 Before commencing excavation work, determine the location and condition of existing underground structures and systems, and notify the Departmental Representative. The Departmental Representative will need to clearly identify these locations to avoid any interruption of service during the execution of the work.

.4 Confirm the location of underground utility pipes by carefully conducting test excavations.

.5 Maintain and protect against damage water, sewer, gas, electricity, and telephone pipes as well as other pipes or other structures identified.

.6 Obtain appropriate instructions from the Departmental Representative before rerouteing a utility pipe or a structure identified in the excavation area. The Departmental Representative will assume the costs of this work.

.7 Take note of the location of preserved, rerouted, or abandoned underground pipes.

.2 Elements on the ground

.1 In the presence of the Departmental Representative, check the condition of technical boxes, fences, connection posts, cables, railway rails, road surfaces, boundary markers and grading markers that may be affected by the work.

.2 During the execution of the work, protect against any damage the elements on the ground or on the access road. In case of damage, immediately restore the affected elements, according to the instructions of the Departmental Representative

Part 2 Products

2.1 MATERIALS

.1 Granular materials must comply with the articles of BNQ 2560-114 (2014) and according to section 31 05 16 – Aggregate Materials.

Part 3 Execution

3.1 SITE PREPARATION

.1 Before starting work, determine and verify the location of service pipes located on or near the site.

.2 Implement environmental protection measures. Refer to section 01 35 43 – Environmental Protection

.3 Remove, within the limits indicated, obstacles and fencing from the excavation area.

.4 Replace the two (2) culverts identified prior to the operation of heavy machinery.

3.2 MEANS OF EROSION AND SEDIMENT CONTROL

.1 Implement temporary means to control erosion and sediment deposition to prevent soil loss that may result from stormwater runoff or wind erosion, and the training of this soil on adjacent pedestrian properties and pathways. These means must comply with the environmental protection measures set out in section 01 35 43 – Environmental protection.

.2 Inspect, maintain, and repair the control facilities in place as necessary until permanent vegetation is well established.

.3 Remove control equipment at the appropriate time and rehabilitate and stabilize surfaces stirred during this work.

.4 Inspect, maintain, and repair the control facilities in place as necessary until permanent vegetation is well established.

.5 Remove control equipment at the appropriate time and rehabilitate and stabilize surfaces stirred during this work.

3.3 PREPARATION/PROTECTION

.1 Protect existing elements in accordance with section 01 56 00 - Temporary Access and Protective Works and relevant municipal by-laws.

.2 Keep excavations clean, free of standing water and crumbly soil.

.3 When the soil may vary significantly in volume due to fluctuations in its moisture content, cover and protect it to the satisfaction of the Departmental Representative.

.4 Protect natural and man-made elements that must remain in place. Unless otherwise specified or unless they are in the work area.

.5 Protect utility pipes that must remain in place.

3.4 LIGHTING

.1 If the contractor wants to work outside of the hours of sunshine, do not only use the lighting positioned on the machinery. The Contractor must also provide sufficient lighting so that the Departmental Representative can observe the work and ensure its safety with the movement of the machinery.

3.5 FROST DEPTH

.1 Frost penetration is estimated at a depth of about 2.0 m for the work site.

3.6 SOILS IN PLACE IN THE EXCAVATIONS

.1 The soils in place identified from three boreholes in future reservoirs. Data on soil thicknesses relative to surface have been summarized in the following table:

Forage	Depth (m)		
	Topsoil	Natural granular deposition (Silty sand to silt sand)	Coherent natural deposition (Mainly clay)
F22-01	0,00 – 0,15	0,15 – 1,83	1,83 – 7,32
F21-02	0,00 – 0,05	0,05 – 1,83	1,83 – 25,60(1)
F21-03	0,00 – 0,08	0,08 – 1,83	1,83 – 5,49

3.7 STRIPPING OF TOPSOIL

.1 Carry out the stripping of topsoil and the deposit in the work area in accordance with section 31 14 13 - Stripping and depositing of the soil.

.2 Take appropriate control measures against erosion and sedimentation to prevent sediment migration outside the boundaries of the project and into watercourses.

3.8 SETTING UP A TEMPORARY PATH OR OTHER TEMPORARY SUPPORT MEASURES (VALIDATION BY CLIENT)

.1 If the Contractor sets up temporary traffic paths made of granular material, those located in the lanes used by the Departmental Representative may be left in place. The Contractor must have the written authorization of the Departmental Representative to leave in place other temporary support measures of the access path.

3.9 TIDE

.1 The site of the work may be subject to high tide or storm surges. During these events, the water level can rise significantly. The Contractor's excavation and equipment could then be flooded.

3.10 DEWATERING AND HEAVE PREVENTION

.1 The groundwater level was 0.12 m above ground level as of May 19, 2022. The contractor will be able to check the level prior to the work using a water level probe in the PVC tubing left in place.

.2 Keep excavations dry throughout the work. The water must be evacuated as it seeps into the excavations so that the bottom of the excavations always remains well drained and stable throughout the period of the work

.3 Submit to the Departmental Representative for review details of proposed methods for drying excavations or preventing uplift, such as the construction of dikes, the installation of filter spikes and the replanting of sheet piles.

.4 If there is a risk of boulding or uplifting, avoid excavating under the water table.

.1 To avoid uplift of the pipes or the excavation bottom, reduce the level of the water table, reseal the sheet piles or use other appropriate means.

.5 Protect open-pit excavations from flooding and high tides and damage that may be caused by runoff.

.6 Evacuate water in accordance with section 01 35 43 - Environmental Protection to persons authorized by the Departmental Representative.

.1 Construct and maintain drainage ditches and other temporary diversions outside the boundaries of the excavation.

.7 Provide and install settling ponds or other water treatment facilities to remove suspended solids or other undesirable materials before discharging them into the drainage ditch.

3.11 SOIL CHARACTERIZATION

.1 If soils need to be characterized, coordinate the characterization methodology with the Departmental Representative. The stacking characterization mode would be appropriate given the available space. The characterization should be done according to the principles and statements of the following guides:

.1 Ministère du Développement durable, de l'Environnement et des Parcs du Québec: Guide d'échantillonnage à des fins d'analyses environnementales: Cahier 5 – Soil sampling, 2010. Including the Addendum to Section 5.3.3 on Volatile Organic Compound Sampling and the Conservation Methods for Soil Sampling Booklet (DR-09-02);

.2 The detection limits must be sufficiently basic to allow the results to be interpreted according to the recommendations of the CCME and the criteria of the Ministère de l'Environnement et de la Lutte contre les Changements climatiques du Québec.

.3 The Contractor will be responsible for all costs related to the characterization.

3.12 CONTAMINATED SOILS STORAGE

.1 Contaminated soil may be temporarily stored in a sealed location that limits the movement of contaminants and may be covered with a membrane in accordance with *the Storage and Transfer Centres for Contaminated Soil Regulations.*

3.13 LOADING, TRANSPORT OF CONTAMINATED SOILS AND SEDIMENTS

.1 In the event of the presence of contaminated soil or excess soil, the method of loading contaminated soil should be selected in such a way as to limit the loss of contaminated soil between the sewage treatment field and the truck dumpsters.

.2 In all cases, as soon as soils and sediments are excavated, when liquid or sludge can be released from contaminated soils, the container or dumpster must be leakproof.

.3 Contaminated soil and sediments must be transported to the site authorized to receive them in accordance with the directives of the Regulation respecting the transportation of dangerous goods R.L.R.Q.C-24.2, r.43. Without limitation, the carrier must have shipping documents and in the case of transport by dump truck the regulation requires:

.1 If the total soil to be excavated exceeds 200 tons, comply with the statements of the Traceability of Excavated Contaminated Soil Regulations (ECSRN).

.4 Completely cover the top of the dumpster to prevent rain or snow from entering or contaminating it from escaping.

3.14 REUSE OF EXCAVATED SOILS

.1 The soils excavated for the installation of concrete tanks and pipes can be reused during backfilling and final leveling. If the water content or the nature of the soil does not allow its reuse, determine a final storage location in collaboration with the Departmental Representative.

3.15 REUSE OF EMBANKMENT SOILS IN THE ADSORPTION FIELD

.1 The size of the purification field according to the TQC plans is approximately 30.5 m by 18 m. The contractor will be responsible for checking the dimensions at the site.

.2 The environmental quality of the soils of the existing sewage field was verified.

.3 The following layers have been identified by drilling and plans as constructed either:

.1 Topsoil: ±0.1 m thick.

.2 Sandy silt (class B embankment): 0.45 to 0.6 m.

.3 Class A sand: 0.9 to 1.2 m thick. Gravel is also present around the pipes,

.4 Natural soils in place under the embankment: grey sandy silt

.4 Following the removal of accessories and pipes from the wastewater treatment system, soils in the treatment field may be reused as recycled backfill materials or aggregate in accordance with section 31 05 16. Prior to their reuse, their geotechnical quality must be verified by laboratory tests by the Contractor.

3.16 EXCAVATION

.1 Carry out excavation work according to the dimensions, lines, dimensions, and levels indicated in x plans.

.2 Excavation work must not in any way alter the bearing capacity of the adjacent foundation or dike.

.3 Debris and deposited materials must be deposited at a sufficient distance from the trench, as directed by the Departmental Representative and in accordance with section 01 35 29.06 - Health and Safety.

.4 Limit work performed with construction equipment in the immediate vicinity of unfilled trenches.

.5 Avoid obstructing the flow of runoff or natural streams.

.6 Completed excavations must be approved by the Departmental Representative.

.7 Remove the bottom of trenches of any unsuitable material, including materials below the required level rating, to the extent and depth determined by the Departmental Representative.

.8 Install geotextiles in accordance with section 31 32 19.16 - Soil Stabilization with Geotextiles.

3.17 BEDDING AND SURROUND OF UNDERGROUND SERVICES

.1 Install granular materials in accordance with section 31 05 16 - Aggregates intended for the siting and covering of underground utility pipes. Compact them in accordance with section 33 31 23 - Sewer lines and valve

.2 The seating and covering materials put in place must not be frozen.

3.18 WATER SOURCE

The Entrepreneur must supply himself with water. The Contractor may not use the water present in the unaerated pond or any source of surface water in the vicinity of the work.

3.19 BACKFILLING

.1 Compaction will be verified by a laboratory selected by the Departmental Representative, as described in sections 01 29 83 – Payment – Testing Laboratory Services and 01 45 00 – Quality Control.

.2 Do not begin backfilling work until you have validated the elevation of the holes for the passage of the pipes in the concrete tanks.

.3 Excavated reworked soils may be reused for backfilling as defined in sections 3.10 and 3.11.3.143.15

.4 Setting up

.1 Extend backfill materials, filler materials and base layer materials in layers 300 mm thick. Add the quantity of water required to obtain the prescribed density. The water source will need to be approved by the Departmental Representative. The tank must be clean and free of contamination.

.5 Compaction: compact each layer of material until the following density is obtained in accordance with the modified compaction energy test (270 kN.M/m³). A summary table is present on the next page

Location Allowed for Use	Aggregate Name	% Compaction of Modified Proctor
Concrete tank seat	MG20 or equivalent authorized by the Departmental Representative – 600 mm	92% without vibration on first 300 mm in contact with clay 95% on the remaining 300 mm
Pipe bedding and surround	CG-14 CG-14b	90%
Alternative pipe bedding and surround	Gravel 20 mm with geotextile	s.o.
Crane work area	MG20 – 300 mm	95% Calculation of the supplier to be expected, see section 33 36 00
Backfill material	Class B and any other granular	90%
Maximum thickness during backfilling	300 mm	s.o.
Raising the dike of the aerated pond	Type of material: Impermeable soil	s.o.

.6 Backfill areas must be free of debris, snow, ice, water, and frozen soil.

.7 Seeded areas: use the excavated material authorized by the Departmental Representative up to the level of topsoil.

.8 It is forbidden to use backfill materials that are frozen or that contain snow, ice, or debris.

3.20 LEVELLING

.1 Carry out the levelling in accordance with section 32 91 19.13 - Installation of topsoil and finishing levelling and according to the slopes and profiles of the plans, so that the water flows downstream into the ditches and the St. Lawrence River.

3.21 SURVEYING FINISHED SURFACES

.1 The Contractor shall survey and level the following, but not be limited to:

- .1 Write it off when connecting existing, modified pipes and all new pipes.
- .2 the dam of the unaerated pond.
- .3 non-aerated pond level control weirs.
- .4 concrete tanks and accessories.
- .5 the watercourse/discharge ditch.
- .6 culverts.
- .7 fences.
- .8 the draught/access manholes of the electrical cables.
- .9 the extent of soils reworked and then deposited on the site, usually those subject to seeding.

.2 The readings must be made using equipment whose accuracy in X, Y and Z is equal to or less than 5 cm. The positioning system to be used in X and Y is the UTM NAD 83 SCRS and in Z the altimeter system CGVD28 corrected with HT2.0. Survey metadata will need to be recorded in the report or contact file. The type of device used for the field survey (make, model) should be described as well as the reference point used.

3.22 RESTORATION OF THE PREMISES

.1 The Contractor must repair all other damage and damage it has caused to the site of the work to the satisfaction of the Departmental Representative

.2 Once the work is complete, remove scrap materials and debris in accordance with section 01 74 19 - Waste Management and Disposal, refill slopes and correct defects as directed by the Departmental Representative.

.3 Clean and rehabilitate the areas affected by the work, according to the directives and to the satisfaction of the Departmental Representative.

.4 Protect newly leveled areas from erosion, prevent traffic and keep them free of waste or debris.

3.23 CLEANING

.1 Cleaning during work: perform the cleaning work in accordance with section 01 74 00 - Cleaning.

- .1 Leave the premises clean at the end of each day.
- .2 Evacuate from the site, every day, the excavated material, and other extracted materials.

.2 Final cleaning: Once the work is completed, remove surplus materials/materials, waste, tools, and equipment from the site in accordance with section 01 74 00 - Cleaning.

.3 All components of the machinery must be free of mud and invasive exotic plant fragments before undertaking any further on-site activities to the satisfaction of the Departmental Representative.

.4 Waste management: sort waste to separate organic matter and recycle matter.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Not Used.

1.2 REFERENCE STANDARDS

1.3 ‘’Bureau de normalisation du Québec (BNQ)’’

.1 Geotextiles used in road engineering, Classification, Characteristics, and test methods 7009 210 (2017)

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide in accordance with section 01 33 00 – Submittal Procedures.

.2 Product Data

.1 Provide manufacturer's instructions, printed product literature and data sheets for geotextiles and include product characteristics, performance criteria, physical size, finish and limitations.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Delivery, store and handle materials and equipment in accordance with section 01 61 00 - General Product Requirements and the manufacturer's written instructions.

.2 Storage and handling

.1 Store materials and equipment in a clean, dry, and well-ventilated area in accordance with the manufacturer's recommendations.

.2 Store geotextiles to protect them from direct sunlight and UV.

.3 Protection must be provided by means of an opaque polyethylene fabric (at least 0.15 mm thick) or equivalent material. Each roll or bundle must be identified and bear the name of the manufacturer, the type of membrane and the dimensions.

.4 Replace defective or damaged materials and equipment with new materials and equipment.

.3 Packaging Waste Management: Recover packaging waste for recycling.

Part 2 Products

2.1 MATERIALS

.1 Geotextile Type III (BNQ: standardized grade ‘’S1-F2’’)

.2 Geotextile Type V (BNQ: standardized grade P2)

Part 3 Execution

3.1 EXAMINATION

.1 Verification of conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for geotextile material installation in accordance with manufacturer's written instructions.

.1 Visually inspect substrate in presence of the Departmental Representative

.2 Inform the Departmental Representative of any unacceptable conditions detected.

.3 Proceed with installation work only after correcting unacceptable conditions.

3.2 INSTALLATION

.1 On leveled surfaces and place them on stone blocks or sandbags.

.2 Set up geotextiles to obtain a solid surface free of folds, curls, and live areas.

.3 On sloping surfaces, set up geotextiles in continuous strips, from the foot of the slope to the planned upper limit.

.4 The installer must ensure that no rock, mud, or other debris is trapped under the geotextiles.

.5 Overlap each successive strip of geotextile 600 mm over previously laid strip.

.6 Prevent the movement of geotextiles and protect them from damage or deterioration before, during and after the placement of protective layers.

.7 Cover with granular materials or soil within six (6) hours of setting up the geotextile.

.8 Replace damaged or deteriorated geotextiles to the satisfaction of the Departmental Representative.

3.3 CLEANING

.1 Cleaning during work: perform the cleaning work in accordance with section 01 74 00 - Cleaning.

.1 Leave the premises clean at the end of each day.

.2 Final cleaning: remove surplus materials, waste, tools, and equipment from the job site in accordance with section 01 74 00 - Cleaning.

.3 Waste management: sorting waste for recycling.

3.4 PROTECTION

.1 Vehicular traffic not permitted directly on geotextile.

.2 Do not overload soil or aggregate covering on geotextile.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Not Used.

1.2 REFERENCE STANDARDS

.1 ASTM International (ASTM) :

.1 ASTM A 53/A 53M-20, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless

.2 ASTM A 90/A 90M-21, Standard Test Method for Weight (Mass) of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings

.3 ASTM A 121-19, Standard Specification for Zinc-Coated (Galvanized) Steel Barbed Wire ASTM A 123/A 123M-17, Standard Specification for Zinc (Hot Dip Galvanized) coatings on Iron and Steel Products

.4 A653/A653M-20, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

.5 ASTM C 618-19, Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete

.6 ASTM F 1664-08(2018), Standard Specification for Poly (Vinyl Chloride) (PVC)-Coated Steel Tension Wire Used with Chain-Link Fence

.2 Canadian General Standards Board (CGSB):

.1 CAN/CGSB-1.181-99, Zinc-rich coating, organic, prepared

.2 CAN/CGSB-138.1-19, Wire Mesh for Fencing

.3 CAN/CGSB-138.2-19, Galvanized Steel Frame for Wire Fence

.4 CAN/CGSB-138.3-19, Installation of Wire Fences

.5 CAN/CGSB-138.4-19, Wire Fence Barrier

.3 Groupe CSA (CSA) :

.1 CSA A23.1/A23.2-19, Concrete - Constituents and Work Execution/Standard Concrete Testing and Practices

.2 CAN/CSA-A3000-18, Compendium of Binding Materials

.4 Master Painters Institute (MPI) :

.1 Architectural Painting Specification Manual - current edition

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 sheet for and fences, poles, and gates and must include product characteristics of the products, performance criteria, physical size, finish, and limitations.

1.4 MATERIALS SUPPLIED

.1 The Departmental Representative will provide padlocks for existing doors and gates. Padlocks are already present on the premises.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Delivery, store and handle materials and equipment in accordance with section 01 61 00 - General Product Requirements.

.2 Delivery and Acceptance: Deliver materials and materials to the job site in their original packaging, which must bear a label indicating the name and address of the manufacturer.

.3 Storage and handling

.1 Store materials according to the manufacturer's recommendations.

.2 Store and protect fence and barrier materials from damage.

Part 2 Products

2.1 MATERIALS A

.1 Concrete mixtures and concrete materials:

.1 Nominal size of the large aggregate: 20-5.

.2 Compressive strength: at least 20 MPa at 28 days.

.2 Fences for wire fences.

.1 Type of mesh as existing.

.2 Height of the fence: such as the existing one to be determined at the site, about 1.8m.

.3 Poles, spacers, and sleepers: galvanized steel pipes such as the existing one.

.4 Upper and lower tensioner wire: single galvanized steel wire, compliant with CAN/CGSB-138.2.

.5 Attachment wire: galvanized steel wire.

.6 Tension bars: made of galvanized steel as existing.

.7 Gates: compliant with CAN/CGSB-138.4.

.8 Barrier frames: according to ASTM A 53/A 53M, galvanized steel pipes of standard weight, with an outer diameter of 45 mm for the peripheral frame and 35 mm for the spacers.

.1 Gates manufactured according to the indications, with joints welded with electricity, galvanized by hot immersion after welding.

.2 Fence mesh attached to the barriers so that the twisted border is at the top.

.3 Gates equipped with hinges, latches and chinnets in galvanized malleable cast iron, which can receive a padlock that can be operated from both inside and outside.

.4 Two-leaf barriers with a chain hook to hold them in the open position, and a central support with vertical lock to hold them in the closed position.

.9 Assembly and hardware parts compliant with CAN/CGSB-138.2, made of galvanized steel.

.1 Tension flanges of galvanized steel of at least 3 mm x 20 mm, or of aluminium of at least 5 mm x 20 mm.

.2 Watertight post caps, securely attached to the posts and bearing the upper crossbeam.

.3 Overhanging fittings providing watertightness and for securing upper sleepers and inward-projecting extensions to support overhanging barbed wire.

.4 Extensions with fasteners or niches 100 mm apart, allowing to hold three (3) rows of barbed wire.

.5 Extensions measuring 300 mm in length and forming an angle of 45 degrees to the horizontal.

.6 Tensioners forged in the press.

.10 Zinc-rich organic coating: conforms to CAN/CGSB-1.181.

.11 2 mm diameter barbed wire made of galvanized steel conforming to ASTM A 121, with four (4) tips every 125 mm.

.12 Grounding rods: copper weld copper stems 16 mm in diameter and 3 m in length.

2.2 FINISHES

.1 Galvanizing:

.1 For chain link fabric: according to CAN/CGSB-138.1, Grade 2.

.2 Pipes: zinc plating of at least 550 g/m², according to ASTM A 90.

.3 Barbed wire: according to ASTM A 121, class 2.

.4 Other fittings: according to ASTM A 123/A 123M.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of conditions: Verify conditions of substrate previously installed under other Sections or Contracts are acceptable for fence and gate installation in accordance with manufacturer's written instructions.

.1 Inform the Departmental Representative of any unacceptable conditions detected.

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

3.2 PREPARATION

.1 Grading

.1 Remove debris and correct ground undulations along fence line to obtain smooth uniform gradient between posts.

.1 Provide a clearance between bottom of the fence and the ground surface of 30 mm to 50 mm.

3.3 ERECTION OF THE FENCE

.1 Erect the fence along the route indicated by the Departmental Representative and in accordance with CAN/CGSB-138.3.

.2 For poles, dig holes of dimensions according to the instructions of the Departmental Representative.

.3 Lay the intermediate poles at intervals of 3 m measured parallel to the ground.

.4 Place reinforcement posts at equal intervals of not more than 150 m if the distance between the end posts or corner posts is greater than 150 m, in the case of all straight and continuous sections of fence laid on a reasonably uniform level of soil.

.5 Lay additional reinforcement poles at significant elevation differences and locations designated by the Departmental Representative.

.6 Lay an angle pole when the change of direction exceeds 10 degrees.

.7 Place end posts at the end of the fence and near buildings.

.1 Lay barrier posts on either side of the openings intended to receive barriers.

.8 Pour concrete into the post holes and then push them to a depth of at least 1,800 mm.

.1 Bring the concrete to a height of 50 mm above ground level and finish the sloping surface to divert water from the poles.

.2 Support the posts to keep them plumb, in the prescribed alignment and level, until the concrete is taken.

.9 Allow the concrete to ripen for at least five (5) days before laying the fence mesh.

.10 Install spacers between the end and barrier posts and the nearest intermediate post, and place them in the middle of the panel, parallel to the surface of the panel.

.1 Place the spacers identically on each side of the corner and reinforcement posts.

.11 Place overhanging fittings and post caps.

.12 Place the upper cross member between the poles and securely securely attach it to them, fix overhanging fittings and hats.

.13 Lay the lower tensioner wire, stretch it tightly and attach it securely to the end, angle, barrier, and reinforcement posts, by means of tensioners and tension flanges.

.14 Deploy the fence mesh, tighten it strongly to the tension recommended by the manufacturer and attach it to the end, angle, barrier, and reinforcement posts, with a tension bar attached to each pole by means of flanges laid 300 mm apart.

.1 The folded border should be at the bottom.

.2 The border should be twisted at the top.

.15 Attach the mesh to the upper sleepers, intermediate posts and lower tensioner wire with attachment wire laid at intervals of 450 mm.

.1 The attachment wire must be twisted over at least two (2) turns.

.16 Place the barbed wire and secure it securely on each extension cord.

.17 Lay grounding rods as directed.

3.4 INSTALLATION OF GATES AND DOORS

.1 Install gates in locations indicated by the Departmental Representative.

.2 Level the ground between the gate posts and set gate bottom approximately 40 mm above ground surface.

.3 Determine the position of the centre gate rest for double gate.

.1 Anchor the support in concrete according to the instructions.

.2 Bring the concrete to above ground level and spread it in a dome shape to prevent water accumulation around the support.

.4 Install gate stops where indicated

.5 Provide a chain to secure gates/doors. The Departmental Representative will provide the padlocks.

3.5 TOUCH UP

.1 Clean damaged surfaces with wire brush removing loose and cracked coatings. Apply two coats of organic zinc-rich paint to damaged areas as indicated in accordance with section 09 91 13 – Exterior Painting.

.1 Pre-treat damaged surfaces according to manufacturers' instructions for zinc-rich paint.

3.6 CLEANING

.1 Cleaning during work: carry out cleaning work in accordance with section 01 74 00 - Cleaning

.2 Final cleaning: remove surplus materials/materials, waste, tools, and equipment from the job site in accordance with section 01 74 00 - Cleaning.

.3 Waste management: Separate waste materials for reuse and recycling.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 31 23 33.01 - Excavation, trenching and backfilling

1.2 DEFINITIONS

.1 Not Used.

1.3 REFERENCE STANDARDS

.1 Bureau de normalisation du Québec

.1 BNQ 0605-100 (2019) Landscaping using plants.

.2 BNQ 2501-025 (2013) Soil particule size analyses.

.3 CAN/BNQ 0413-200 (2016) Organizational amendments– Composts.

.2 Government of Canada

.1 Agriculture and Agri-Food Canada

.1 Canadian Soil Classification System (2002)

.3 Conseil des production végétales du Québec

.1 Methods for analysis of soils, manure, and plant tissues (1997).

1.4 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 The Contractor must indicate to the Departmental Representative the location (or locations) of the topsoil it intends to use. The Contractor must certify, by submitting supporting test or analysis reports, not more than one year old, that the characteristics of the topsoil comply with the requirements of document BNQ 0605-110 (2019) and must indicate the value of each characteristic. The Departmental Representative may take samples of aggregates, at the source or from manufacturing plants, to verify their characteristics by laboratory tests.

.1 The required analyses are Organic carbon (method MA-1), organic matter (method MA-2), electrical conductivity (method CO-1), phosphorus (method ME-3), potassium (method ME-3), pH water (method PH-1), cation exchange capacity (method CA-1), particle size (method LC 21-040), sedimentometry (method BNQ 2501-025)

1.5 SUPPLIED MATERIALS

.1 the Departmental Representative wishes to reuse the topsoil already present on the site which will be recovered during the stripping of the site.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Delivery, store and handle materials and equipment in accordance with section 01 61 00 - General Product Requirements.

.2 Transport and handling: transport and handle topsoil in a manner that prevents segregation, contamination, and degradation.

1.7 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 16.16 - Construction Progress Schedule - Critical Path Method

Part 2 Products

2.1 TOPSOIL

.1 Topsoil for planting beds : mixture of particles, microorganisms and organic matter which provides suitable medium for supporting intended plant growth in accordance with the description of mineral soil for use for lawns as specified in BNQ 0605-100 (2019).

.1 Mineral soils must contain less than 30% organic matter on a dry basis.

.2 The mineral part of the land must have the following particle size:

.1 Particles with a diameter varying from 0.002 mm to 2 mm: 80-90% including 10-20% of particles with a diameter of less than 0.05 mm.

.2 Particles with a diameter of less than 0.002 mm: 0-2 0%

.3 Particles with a diameter ranging from 2 mm to 25 mm: 0-5%

.3 Texture based on the Canadian Soil Classification System: sandy loam or loam sand.

.4 There are the following chemical properties:

.1 at least 3% organic matter on a dry basis.

.2 PH 5.5 to 7.5.

.3 Cation exchange capacity (CEC), in meq/100g: 7.

.4 Phosphorus, in mg/kg: at least 21.

.5 Potassium, in mg/kg: at least 37.

.5 Not containing toxic elements or growth inhibitors.

.2 Consistency: friable earth when wet.

Part 3 Execution

3.1 TEMPORARY MEANS OF EROSION AND SEDIMENT CONTROL

.1 Implement temporary means to control erosion and sediment deposition to prevent soil loss that may result from stormwater runoff or wind erosion, and the training of this soil on adjacent pedestrian properties and pathways. These means must be in accordance with the indications of the site-specific environmental protection plan, as set out in section 01 35 43 – Environmental Protection.

.2 Inspect, maintain, and repair the control facilities in place as necessary until permanent vegetation is well established.

.3 Remove control equipment at the appropriate time and rehabilitate and stabilize surfaces stirred during this work.

3.2 PREPARATION OF EXISTING GRADE

.1 Verify that grades are correct.

.1 Otherwise, notify the Departmental Representative and not undertake the work until you have received the latter's authorization.

.2 Level the soil by removing hollows and roughnesses and giving it a slope that promotes a good flow of water to the drainage ditches around the work site.

.3 Remove debris, roots, branches, stones larger than 50 mm in diameter and other harmful substances.

.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 (Usually of 100 mm).

.5 Regale the sub-foundation with a dozer or manually to obtain a uniform surface that respects parallel the levels of the finished ground.

.6 Achieve a compaction value of 90% of the modified protor.

3.3 INSTALLATION AND SPREADING OF TOPSOIL AND POTTING SOIL

.1 Once the Departmental Representative has accepted the existing base floor (sub-foundation), put the topsoil in place.

.2 Spread the topsoil in uniform layers not exceeding 200 mm thick to cover the reworked or damaged floors during the work.

.3 Avoid spreading or leveling the soil when it is wet, frozen, or saturated.

.1 If frozen topsoil is present at the site, notify the Departmental Representative to determine a favorable location. Promote its implementation in a sector where settlements will have little impact. The Departmental Representative will approve the surface only during the spring.

3.4 FINISH GRADING

.1 Grade to eliminate rough spots and low areas to ensure positive drainage.

.1 Prepare loose friable bed by means of cultivation and subsequent raking.

.2 The final earthmoving level ensures that surface water does not drain to the six (6) visiting openings of the concrete tanks (septic tank and biological reactor).

3.5 BASEMENT

.1 After spreading and loosening topsoil, subsoil the area to improve drainage and soil prominence.

.2 By means of a subsoiler with a vibrating blade, work the earth to a depth of 150 mm. Follow natural contour lines.

.3 After a first pass, resume the basement in rows perpendicular to the first.

.4 Work the soil by means of a harrow to break the clods.

3.6 RECEPTION

.1 The Departmental Representative will review the thickness of the topsoil layer and finishing leveling is acceptable.

.2 If frozen topsoil has been spread to the site at a favorable location discussed with the Departmental Representative, the Departmental representative will approve the surface only when thawing in the spring.

3.7 SURPLUS MATERIALS

.1 No surplus material is provided. Extend the excavated material in the areas identified in the plans. Notify the Departmental Representative and identify the Departmental Representative if additional areas are required.

.2 Soils of the "topsoil" type will be subject to environmental characterization in the treatment field. These soils may have to be transported off site and will be the subject of optional work that must be authorized by the Departmental Representative.

3.8 CLEANING

.1 Cleaning during work: Proceed with cleaning in accordance with section 01 74 00 - Cleaning.

.1 Leave the places organized and tidy at the end of each day.

.2 Keep pavement and area adjacent to site clean and free from mud, dirt, and debris at all times.

.2 At the end of the work, remove surplus materials/materials, waste materials, tools and equipment from the construction site.

.1 Clean and rehabilitate the areas affected by the work.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Not Used.

1.2 REFERENCE STANDARDS

.1 ASTM International

.1 ASTM 5338 Biodegradation Test – Composting

.2 ‘’Bureau de normalisation du Québec’’

.1 BNQ 0605-100-2001 Landscaping using plants

1.3 MEASUREMENT AND PAYMENT

.1 Not Used.

1.4 ADMINISTRATIVE REQUIREMENTS

1.5 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.

.1 Schedule of work

.2 Notify the Departmental Representative as soon as possible of the work schedule of possible impacts on the fiscal year.

.3 Establish the hydraulic seeding schedule so that it coincides with the surface preparation work.

.1 If the sowing period is set in the fall so that the seeds are dormant. The criteria to be respected are:

.1 Night temperatures should oscillate between -2 and 0 degrees Celsius for at least 5 days.

.2 The temperature of the ground should be below 10 degrees Celsius, but the ground should not be frozen.

.2 If the sowing period is established in the spring period: once the soil thaws until June 15.

1.6 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit the required documents and samples in accordance with section 01 33 00 – Submittal Procedures.

.2 Product Data

.1 Submit the following product data sheets:

.1 Seed.

.2 Mulch.

.3 Adhesive agents.

.3 Send the following information in writing to the Departmental Representative, 10 days before the start of the work.

.1 The capacity in liters of the hydraulic seeder.

.2 The number of products to be used per tank, calculated according to the capacity of the seeder.

.3 The number of loads required per hectare to apply the prescribed seed dose per hectare.

.4 Certificates: submit documents signed by the manufacturer that certify that products, materials, and equipment meet the requirements for physical characteristics and performance criteria.

.5 Test reports: Submit test reports certifying that products, materials and equipment meet the requirements for physical characteristics and performance criteria.

1.7 QUALITY ASSURANCE

.1 Not Used.

1.8 DELIVERY, STORAGE AND HANDLING

.1 Delivery, store and handle materials and equipment in accordance with section 01 61 00 - Common Product Requirements and with the 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 and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Replace defective or damaged materials and equipment with new

.4 Packaging waste management: recover packaging waste for reuse/re-use and pallet recovery.

1.9 WARRANTY

.1 For seeding, the 12-month warranty period is extended to one (1) full growing season.

.2 The Departmental Representative will inspect the plants at the end of the warranty period.

Part 2 Products

2.1 MATERIALS

.1 Seed:

.1 Mixture 1, for wetlands with the addition of flowers at a rate of 41 kg/ha (4.1 g/m²) and whose composition according to relative weight is:

10,80%	*Bidens cernua*	*15,00%*	*Desmodium canadense*
2,20%	*Anemone canadensis*	*21,60%*	*Andropogon gerardii*
0,20%	*Angelica atropurpurea*	*0,60%*	*Calamagrostis canadensis*
4,30%	*Asclepias incarnata*	*1,10%*	*Carex bebbii*
1,10%	*Eupatorium perfoliatum*	*1,10%*	*Carex crammed*
1,30%	*Euthamia graminifolia*	*4,30%*	*Carex vulpinoidea*
1,50%	*Eutrochium maculatum*	*1,70%*	*Dichanthelium clandestinum*
1,50%	*Helenium autumnale*	*0,10%*	*Juncus effusus*
12,90%	*Iris versicolor*	*4,30%*	*Poa palustris*
0,20%	*Mimulus ringens*	*0,40%*	*Scirpus atrovirens*
2,20%	*Rudbeckia laciniata*	*0,10%*	*Scirpus cyperinus*
1,70%	*Symphyotrichum puniceum*	*1,10%*	*Sparganium americanum*
4,30%	*Verbena hastata*	*2,20%*	*Spartina pectinata*
2,20%	*Zizia aurea*		

.2 Shelter plants required and rates for autumn sowing:

.1 Echinochloa crus-galli at a rate of 2 g/m²

.3 Shelter plants required and rate for a spring seedling:

.1 Echinochloa crus-galli at a rate of 1 g/m²

.4 Mixture 2 for the sections located on the flat suitable for clay soils and pollinators, with a hardiness of zone 3 and at a rate of 49 kg/ha (4.9 g/m²) and whose composition according to relative weight is:

1,00%	*Asclepias incarnata*
5,50%	*Eupatorium perfoliatum*
3,00%	*Eutrochium maculatum*
3,50%	*Helenium autumnale*
9,00%	*Heliopsis helianthoides*
4,00%	*Rudbeckia hirta*
2,50%	*Rudbeckia laciniata*
2,50	*Symphyotrichum puniceum*
5,00%	*Verbena hastata*
5,00%	*Zizia aurea*
6,00%	*Astragalus canadensis*
16,50%	*Andropogon gerardii*
15,00%	*Elymus canadensis*
12,50%	*Festuca rubra*
9,00%	*Panicum virgatum*

.1 Shelter plants required and rates for autumn sowing:

.1 Avena sativa at a rate of 26 g/m²

.2 Echinochloa crus-galli at a rate of 2 g/m²

.3 Elymus canadensis at a rate of 4 g/m²

.2 Shelter plants required and rate for a spring seedling:

.1 Avena sativa at a rate of 11 g/m²

.2 Echinochloa crus-galli at a rate of 1 g/m²

.3 Elymus canadensisat a rate of 4 g/m²

.2 In accordance with the requirements of the Seeds Regulations, seed must be presented in individually labelled packaging bearing the name of the supplier.

.3 Mulch: specially manufactured for hydraulic spraying, non-toxic, water-activated, with the addition of green dye, free of germination and growth inhibitors, and having the following characteristics.

.1 Type I mulch

.1 Composed of wood cellulose fibers.

.2 Organic matter content: 95%, plus or minus 0.5%.

.3 pH : 6.0.

.4 Water absorption capacity: 900%.

.4 Adhesive agent: vegetable carbohydrate powder soluble in water.

.5 Water: free of impurities that could prevent grass germination and growth.

.6 Fertilizer

.1 No fertilizers are allowed

.7 Inoculant: Containers of inoculant must be labelled with an expiry date.

.8 Erosion Control Mattress: The erosion control mattress must be made of double net agricultural straw, or approved equivalent, resistant to current velocities of 2.6 m/s or more, and shear stresses of 96 Pa or more.

.9 Biodegradable anchor hooks made of cornstarch or approved equivalent, length 150 mm according to ASTM 5338 standards.

2.2 WATER

The Entrepreneur must supply himself with water free of impurities that could prevent the germination and growth of plants. The Contractor may not use the water present in the unaerated pond or any source of surface water in the vicinity of the work.

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 Immediately inform the Departmental Representative of any unacceptable conditions detected.

.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, road signs, technical boxes, fences, plants, utility facilities and other surfaces on which no product should be sprayed.

.2 Immediately remove the sprayed product on structures and surfaces that do not need to be treated, as indicated by the Departmental Representative.

3.3 QUALITY OF EXECUTION OF THE WORK

.1 Protect structures, road signs, technical boxes, fences, plants, utility facilities and other surfaces on which no product should be sprayed.

.2 Immediately remove the sprayed product from structures and surfaces that are not to be treated, to the satisfaction of the Departmental Representative.

.3 Do not perform the work when conditions are unfavourable, for example when the wind speed exceeds 30 km/h, or when the ground is frozen or covered with snow, ice or stagnant water.

.1 If sowing is carried out in the fall, the soil temperature should be below 10 degrees Celsius, but the soil should not be frozen.

.4 Prevent traffic on seeded surfaces until vegetation is established.

3.4 PREPARATION OF SURFACES

.1 Perform finishing leveling of the surfaces to be seeded to eliminate hollows and roughness. Ensure that surfaces are free of deleterious materials and scrap.

.2 Ensure that seeding surfaces are wet to a depth of 50 mm before starting seeding.

.3 Have the areas and thickness of the topsoil approved by the Departmental Representative before starting sowing.

3.5 PREPARATION OF SLURRY

.1 Measure quantities by weight or volume, using a container graduated according to the weight of the product, to the satisfaction of the Departmental Representative. Provide the necessary equipment for the measurement of quantities.

.2 Pour the required amount of water into the hydraulic seeder. Turn on the stirrer before adding the seeding products. Spray the mulch and slowly pour it into the seeder.

.3 Once all the materials have been poured into the seeder and well mixed, incorporate the adhesive agent and mix well.

.4 The use of fertilizers is prohibited.

3.6 SLURRY APPLICATION

.1 Use hydraulic seeding equipment that meets the following characteristics.

.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 Pipes of at least 30 m for hand spray seeding, equipped with appropriate nozzles.

.1 Check the soil stability and length of pipes required so that the seed mixture can be applied to the entire site.

.2 If the scope is not sufficient to apply the seeds, present the Departmental Representative with an alternative method of application.

.2 Spread the seeding mixture evenly, giving the jet an optimal angle to ensure seed adhesion to surfaces and germination.

.1 Use the nozzle best suited to the application.

.2 Use hand hoses to seed hard-to-reach areas and to properly control the application.

.3 To ensure uniform surface coverage, overflow the application by 600 mm on adjacent surfaces covered with grass or turf.

.4 Resume sowing where the application of the mixture is not uniform.

.5 Remove sprayed product from structures and surfaces that should not be treated.

3.7 INSTALLATION OF THE EROSION CONTROL MATTRESS MADE OF VEGETABLE FIBER

.1 The erosion control mattress is required for mixing 1.

.2 Only pedestrian traffic is allowed on seeded surfaces (no machinery) for the installation of the erosion control mattress and the planting of plants that must be carried out by hand. This requirement must be met until vegetation is established.

.3 After sowing, the contractor must fold down and anchor the erosion control mattress on the entire surface to be planted. The erosion control mattress must be installed as specified in the plans.

.4 The mattress should be deployed vertically and anchored over the entire surface of the last layer of planting soil with a thickness of 150 mm using anchor hooks.

.5 Mattress strips should be folded down to the top of the embankment and fixed with metal anchor hooks. The contractor must avoid overthickness at the anchor points at the top of the embankment.

.6 The covering between the strips of the mattress should be 200 mm; these strips must also be anchored to each other with metal anchor hooks to ensure their stability and avoid winds. The number of square brackets on the overlap should be increased according to the layout and number provided for in the plan.

.7 The upstream mattress must cover the one immediately downstream and not the other way around.

3.8 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

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

.2 Keep pavement and area adjacent to site clean and free of 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 00 - Cleaning.

.3 Waste management: sorting waste for reuse/re-use and recycling.

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

3.9 PROTECTION

.1 Around newly seeded areas, erect a sufficient fence to protect these areas from deterioration due to pedestrian traffic or other types of traffic.

3.10 MAINTENANCE DURING ESTABLISHMENT PERIOD

.1 Carry out the maintenance work listed below, from the date of sowing until the date of receipt of the work by the Departmental Representative

.1 Repair and reseed dead or bare spots to allow establishment of seed before acceptance

.2 Water the seeded areas to maintain the optimal level of moisture required to ensure germination and continued growth of the turf. Adjust the watering flow so that the soil is not washed away by water.

.3 Carry out the maintenance work proposed by the Supplier of seed mixtures.

.1 For mixture 1, stratify after 60 days.

3.11 ACCEPTANCE

3.12 Seeded areas will be accepted by the Departmental Representative if the following conditions are met.

.1 Seeded surfaces are free of eroded or bare areas, dead grass areas and ruts.

3.13 Seeded areas will be accepted definitively following a full growing season.

3.14 ACTIVITIES RELATED TO THE COMPLETION OF WORK

.1 Submit maintenance reports for seeded areas to the Departmental Representative.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 31 05 16 – Aggregates Materials

.2 Section 31 23 33.01 - Excavation, Trenching and Backfilling.

.3 32 92 19.16 - Hydraulic seeding.

1.2 REFERENCE STANDARDS

.1 Departmental of Justice Canada (Jus)

.1 SOR/2018-196 Prohibition of Asbestos and Products Containing Asbestos Regulations.

.2 American National Standards Institute/American Water Works Association (ANSI/AWWA)

.1 AWWA C-509 Resilient-Seated Gate Valves For Water Supply Service.

.3 ASTM International (ASTM)

.1 ASTM C 136-19, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

.2 ASTM C 117-17, Standard Test Method for Material Finer Than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.

.3 ASTM D1557, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3))

.4 ASTM D1784-20 Standard Classification System and Basis for Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds

.5 ASTM D 2241-20, Standard Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series).

.6 ASTM D 2992-18, Standard Practice for Obtaining Hydrostatic or Pressure Design Basis for "Fiberglass" (Glass-Fiber-Reinforced Thermosetting Resin) Pipe and Fitting.

.7 ASTM D 3034-21, Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

.8 ASTM D3350, Standard Specification for Polyethylene Plastics Pipe and Fittings Materials

1.3 ‘’Bureau de normalisation du Québec (BNQ)’’

.1 BNQ 1809-300, Drinking water and sewer pipes – general technical clauses.

.2 BNQ 1809-300 M1 (2019) Drinking water and sewer pipes

.3 BNQ 3650-900, Installation code for boilers, appliances, and pressurized piping.

.4 BNQ 2662-420 (2009) - Sewer manholes, sumps, valve chambers and pumping stations prefabricated in reinforced concrete.

.5 BNQ 3221-500 (2017) - Civil works – Grids, stamps, frames, sump hatches and key plugs – Cast iron or ductile iron.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-8.1-88, Wire mesh control sieve, non-metric.

.2 CAN/CGSB-8.2-M88, Wire mesh control sieve, metric.

.3 Groupe CSA (CSA)

.1 CSA Series B137-20 , Compendium of Standards for Pressure Piping in Thermoplastic Material.

.2 CSA B1800:21 Thermoplastic non-pressure piping compendium

.4 Ministry of Transport of Quebec (MTQ)

.1 Volume III – Works of art, Chapter 4, standard drawing s 005 and 010

1.4 DEFINITION

.1 The term "mouth to key" corresponds to the translation of the English term valve box.

1.5 PRODUCTS INSTALLED ONLY UNDER THIS SECTION

.1 Not Used.

1.6 MEASUREMENT FOR PAYMENT

.1 Not Used.

1.7 ADMINISTRATIVE REQUIREMENTS

.1 Scheduling:

.1 Schedule Work to minimize interruptions to existing services. of the NWA of Cap-Tourmente.

.2 Submit the schedule of expected interruptions and adhere to the schedule approved by the Departmental Representative.

.3 Notify the Departmental Representative and building manager a minimum of 24 hours in advance of interruption in service.

1.8 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit the required documents and samples in accordance with section 01 33 00 – Submittal Procedures.

.2 Product Data

.1 Submit manufacturer's instructions, printed product literature and data sheets for pipes and backfill and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Ensure that certification is marked on pipes.

.3 Manufacturer's Instructions: Submit to the Departmental Representative one (1) copy of the manufacturer’s installation instructions.

1.9 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials and equipment in accordance with section 01 61 00 - General Common Product Requirements and with manufacturer’s written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and handling Requirements

- .1 Store materials in accordance with the manufacturer's recommendations.
- .2 Store and protect pipes from damage.
- .3 Replace damaged or defective materials and equipment with new.

.4 Packaging waste management: recover packaging waste for reuse.

Part 2 Products

2.1 MATERIALS

.1 Polyvinyl chloride (PVC) pipes: according to CSA B137.3 and ASTM D 2241.

- .1 Normal dimensional ratio (SDR): 26.
- .2 Outer diameter compatible with cast iron pipe.
  - .1 Nominal diameter 100 mm and 150 mm
- .3 Color: white
- .4 Pressure class: 1,100kPa (160 PSI).
- .5 Interlocking, with sealing and anchoring.

.2 High-density polyethylene pipes (HDPE with smooth interior and one perringed exterior according to BNQ-3624-120 and CSA B182.8

- .1 Minimum stiffness of 210 kPa.
- .2 Nominal diameter of 250 mm.
- .3 Waterproof and particulate seal according to CSA B182.8
- .4 Accessory: monolithic HDPE adapter for concrete connection according to BNQ 1809-300 standard and O-ring for connections.

.3 Resilient seat valve according to AWWA C-509.

- .1 Minimum pressure class: 250 PSI (1,700 kPa).
- .2 50 mm (2 in.) square maneuver nut whose fasteners do not interfere with the insertion of the operation tool.
- .3 Diameter compatible with cast iron pipe.
  - .1 Nominal diameter 100 mm.

.4 Rigid insulation: according to CAN/ULC S701.1 Type 4

- .1 Thickness of 75 mm (3 in.).
- .2 Compressive strength of 60 PSI (420 kPa).

.5 Key mouth and accessories

.1 Lower part made of corrosion-resistant plastic, with a diameter compatible with the valve, a long ueursufficient to allow adjustment to ground level, or equivalent approved by the Representative of the Ministry.

.2 Guide plate compatible with the lower part.

.3 Adjustable upper part and ductile iron in accordance with BNQ 3221-500, of sufficient length to allow adjustment at ground level.

.4 T-key modified to replace the bar with a steering wheel permanently installed on the valve, exceeding the level of the sol by about 1.2 m.

2.2 PIPE BEDDING AND SURROUND MATERIALS

.1 Granular materials must comply with sections 31 05 16 – Aggregate Materials, 31 23 33.01 - Excavation, Trenching and Backfilling.

2.3 BACKFILL MATERIALS

.1 Backfill materials: in accordance with section 31 23 33.01 - Excavation, Trenching and Backfilling.

.2 Dimensionally stabilized backfill materials: in accordance with section 31 23 33.01 - Excavation, Trenching and Backfilling.

.3 Excavation equipment reworked and wastewater treatment field in accordance with the statements in section 31 23 33.01 - Excavation, Trenching and Backfilling.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of conditions: verify conditions of substrate previously installed under other Sections or Contracts are acceptable for pipe installation 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 PREPARATION

.1 Clean and dry pipes and fittings before installing them.

3.3 TRENCHING

.1 Dig trenches in accordance with section 31 23 33.01 - Excavation, Trenching and Backfilling.

.2 Before installing seating materials and pipes, have the alignment and depth of the trenches approved by the Departmental Representative.

3.4 GRANULAR BEDDING

.1 Use seating materials that are not frozen.

.2 Place the granular bedding materials in a uniform layer of not more than 300 mm compacted thickness.

.3 Once half the diameter of the pipe is backfilled with the seating materials, the site's reworked excavation equipment can be reused in accordance with the statements in section 31 23 33.01 - Excavation, Trenching and Backfilling

.4 Erect the seat according to the prescribed levels and in such a way as to form a continuous and uniform support surface for the pipes.

.5 Shape transverse depressions as required to suit joints.

.6 In accordance with the statements in section 31 23 33.01 - Excavation, Trenching and Backfilling, each layer of the seat over its entire width to at least 90 % of the corrected maximum dry density according to ASTM D1557.

.7 In accordance with the statements in section 31 23 33.01 - Excavation, Trenching and Backfilling, re-embalm any excavation dug above the lower level prescribed for the seat, with the materials used for the seat, and then compact to at least 90% of the maximum corrected dry density according to ASTM D1557.

3.5 INSTALLATION

.1 Lay pipes in accordance with the manufacturer's recommendations and the requirements of BNQ 1809-300 and BNQ 3650-900.

.1 Use Ø150 mm pipe anchorage specifications for Ø100 mm pipes.

.2 Use fittings with a maximum angle of 45°, with a long radius.

.3 Use laser alignment equipment to ensure a constant slope and alignment of pipes.

.4 During handling and transport, avoid damage to machined pipe tips.

.5 Respect the level and alignment prescribed for the pipes.

.6 Carefully align the pipes before assembling them.

.7 At the joints, do not exceed the maximum permissible deviation according to the written recommendations of the pipe manufacturer.

.8 Support the pipes securely along their entire length, leaving the necessary clearances for the fittings.

.1 Do not use wedges to support pipes.

.9 Keep pipes and seals free of foreign matter.

.10 Avoid hitting or off centering linings or soiling them with dust or any other foreign matter. If necessary, remove, clean, lubricate and replace these seals before redoing the seals.

.11 Support the pipes with slings or a crane to minimize lateral pressure on the linings and maintain concentric alignment of the pipes until they are properly installed.

.12 Assemble the pipes with sufficient pressure so that the seals are made in accordance with the manufacturer's recommendations.

.13 Groom the backfill materials below and along the pipes or use another method approved by the Departmental Representative to properly hold the joints in place once they are completed.

.14 When the work is to be interrupted, place stops under the pipes according to the instructions of the Departmental Representative to avoid any movement of the latter during the downtime.

.15 The valve must be topped with a key mouth and the base must fit perfectly with the valve.

.1 Install a flexible gasket between the valve operating key and the upper part of the key mouth, to prevent particle intrusion into the key mouth.

3.6 CONNECTION TO THE EYE

.1 For optional work, the connection to a concrete structure will be made using a monolithic HDPE adapter, according to bnQ 1809-300. The end to be connected to the structure will be provided with a smooth wall and the other end with an O-ring for connections.

3.7 INSTALLATION OF COVERING MATERIALS

.1 Use covering materials that are not frozen.

.2 Once the pipes have been put in place and the joints duly inspected by the Ministry Representative, cover the pipe with granular materials, as indicated. Leave joints and fittings visible until on-site testing is complete.

.3 Manually place the covering materials in uniform layers up to 300 mm thick after compaction, as indicated.

.4 Place the covering material up to 300 mm above the pipe crown.

.5 Place a warning identification tape over the covering material.

.6 From the radiator to mid-height of the pipe, compact each layer to at least 90 % of the maximum dry density corrected according to ASTM D 1557.

.7 From the mid-height of the pipe to the level where the backfill begins, compact each layer to at least 90 % of the corrected maximum dry density according to ASTM D 1557.

.8 Once the results of the on-site tests have been accepted by the Ministry Representative , cover the joints.

3.8 BACKFILL

.1 Place backfill material in unfrozen condition.

.2 Install rigid insulation when the floor covering is less than 2.00 m, according to the specifications specified in the plan.

.3 Adapt the working method to hold the warning tape in place during backfilling.

.4 Place the backfill materials in uniform layers not more than 300 mm thick after compaction on the covering materials up to the indicated level.

.5 Install backfill materials in accordance with section 31 23 33.01 - Excavation, Trenching and Backfilling.

3.9 FIELD TESTING AND FORCE MAIN

.1 Conduct penstock testing in the presence of the Departmental Representative in accordance with the requirements of BNQ 1809-300 and BNQ 3650-900.

.2 Secure caps, elbows, and tees to prevent movement under the test pressure.

.3 Expel air from the pipes by slowly filling them with water.

.4 While the network is under pressure, check the pipes, seals and fittings uncovered.

.5 Remove defective seals, pipes and fittings and replace them with new, flawless equipment.

.6 If the leaks exceed the prescribed limit, identify the defects, and make the necessary repairs.

.7 Repeat the tests until the total leakage value is below the limit prescribed for the entire length of the pipe.

.8 Complete the backfilling.

.9 No testing is required for HDPE pipes indicated as optional work.

3.10 CULVERTS

.1 Install culverts according to the principles of standard drawing 005 and 010 of Chapter 4 of Volume III of the MTQ Standards on Structures

- .1 Place pipe on a support cushion of additional width of 600 mm compared to the outer diameter on a thickness of 150 mm, separated using a geotextile.
- .2 Notify the Departmental Representative if it is not possible to have a minimum overlap of 600 mm over the crown of the pipe.
- .3 The embankment lining at the entrance and outlet will consist of topsoil present on site, seeding and a vegetable fibre mattress as set out in section 32 92 19.16 - Hydraulic Seeding.

.1 The erosion protection stone must be placed on a geotextile (BNQ: standardized grade P2) beyond the equivalent of the length of the diameter of the culvert (2 times the diameter for the outlet), on each side of the culvert

3.11 CLEANING

.1 Progress Cleaning: clean in accordance with Section [01 74 00 - Cleaning].

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

.1 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

.2 Waste management: sorting waste for reuse and recycling.

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

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 31 05 16 – Aggregate Materials

.2 Section 31 23 33.01 - Excavation, Trenching and Backfilling.

.3 Section 44 01 00 - Equipment – Process Mechanics.

1.2 REFERENCE STANDARDS

.1 Quebec's Ministry of the Environment and the Fight against Climate Change (MELCC)

.1 Guide for the Study of Conventional Domestic Wastewater Treatment Technologies

.2 CSA Group

.1 CSA A23.1-14/A23.2-14, Concrete - Constituents and execution of work / Tests and standard practices for concrete.

.2 CSA A23.4-F16 (C2021), Precast concrete: components and execution of the work.

.3 CSA B66-F10 (C2015), Requirements for the Design, Constituent Materials and Manufacture of Prefabricated Septic Tanks and Retention Tanks.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit documents and samples required under section 01 33 00 – Submittal Procedures

.2 Submit a lift plan according to 01 35 29.06 – Health and safety, in collaboration with the crane supplier.

.3 Product Data

.1 Submit manufacturer's instructions, printed product literature and data sheets for [utility septic tanks] and include product characteristics, performance criteria, physical size, finish, and limitations.

.4 Shop Drawings:

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

.2 Shop Drawings: conform to CSA A23.4.

.1 Indicate on drawings.

.1 Methods of handling and erection.

.2 Storage facilities.

.3 Openings, sleeves, inserts and related enforcement.

1.4 QUALITY ASSURANCE

.1 Manufacturers of precast concrete elements is certified by CSA as meeting requirements of CSA A23.4.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Delivery, store and handle materials and equipment in accordance with section 01 61 00 - General Product Requirements and the manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: Deliver materials to site in their original packaging, labelled with manufacturer’s name and address.

.3 Storage and Handling Requirements:

.1 Store materials and equipment in accordance with the manufacturer's recommendations.

.2 Store to protect them from impact with machinery.

.3 Replace damaged or defective materials and equipment with new

.4 Packaging waste management: recover packaging waste for reuse.

Part 2 Products

2.1 DESIGN REQUIREMENTS

.1 Design prefabricated concrete septic tanks according to CSA B66 and the Guide for the Study of Conventional Domestic Wastewater Treatment Technologies and to carry handling stresses and indicated service loads.

.2 Concrete tanks (septic tank and biological reactor) must have a minimum effective capacity of 51.2 m^3, an external length of at least 9.8 m, an external width of at least 3.35 m and a height of at least 2.66 m excluding access chimneys.

2.2 CONCRETE MIXES AND MATERIALS

.1 Concrete dosing materials and formulas: compliant with CSA B66 and CSA A23.1/A23.2.

.2 Cement: GU type.

2.3 MANUFACTURE

.1 Septic tanks must be prefabricated according to CSA A23.4.

2.4 FINISHES

.1 Precast concrete septic tanks must have a commercial grade finish that complies with CSA A23.4.

2.5 VISIT OPENINGS

.1 Three (3) visiting holes must be provided to facilitate cleaning and inspections.

.1 The holes at the upstream and middle ends shall be at least 750 mm in diameter.

.2 For the biological reactor, the hole at the downstream end where the UV equipment will be installed must be of a minimum diameter of 900 mm.

.2 Chimneys must leave at least 150 mm of space for the installation of process equipment.

.3 Lids should be made of fiberglass and insulated.

2.6 SEATING MATERIALS FOR HANDLING

.1 Granular materials shall comply with the requirements of sections 31 05 16 – Aggregates, and 31 23 33.01 - Excavation, trenching and backfilling.

2.7 SEATING AND COVERING MATERIALS

.1 Granular materials shall comply with the requirements of s sections 31 05 16 – Aggregates, and 31 23 33.01 - Excavation, trenching and backfilling.

2.8 BACKFILL MATERIAL

.1 Materials conforming to sections31 05 16 - Aggregates Requirements and 31 23 33.01 - Excavation, Trenching and Backfilling.

2.9 MODULAR WALL SEALS

.1 Modular seals for wall crossings:

.1 silicone with stainless steel hardware of grade 316 and corrosion-resistant sleeves.

.2 waterproof rubber seals inserted into the concrete during the manufacture of the tank.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for utility septic tank installation 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 SEPTIC INSTALLATION

.1 Place bedding and surround material in unfrozen condition.

.2 Carry out excavation work in accordance with section 31 23 33.01 - Excavation, Trenching and Backfilling and according to the materials specified in section 31 05 16 – Aggregates Requirements.

.3 Tanks must be installed in a place free of motorized traffic.

.4 Install the septic tank base materials according to the details provided and according to section 31 23 33.01 - Excavation, Trenching and Backfilling and the following:

.1 All organic soils, embankment materials, reworked, frozen, unstable, deleterious or unbuildable soils will need to be fully excavated until the coherent natural deposit is reached below the surface of the reservoirs.

.2 Sensitive soils are present under the tank. The contractor will have to implement an appropriate excavation technique to avoid reworking and/or destabilization of the materials exposed at the bottom of the excavations.

.3 Avoid excavations during rainy periods, leave excavated surfaces exposed to rain and circulate on bare surfaces with machinery.

.4 Use a toothless bucket when preparing the excavation bottom. To achieve a support surface of the foundations must be uniform, smooth, and horizontal and the materials must not be reworked.

.1 A Departmental Representative will have to accept the surface before proceeding with the installation of the seat. The Departmental representative could recommend that excavations be continued in greater depth or that appropriate ad hoc interventions be carried out (installation of a geotextile, a layer of protective material, an additional drainage system, etc.).

.5 Place the tank on a 600 mm of a material made of non-inflating crushed stone or gravel, of mg-20 size, accompanied by a type III geotextile membrane (BNQ: standardized grade S1-F2)

.1 The cousin must have an over width of 600 mm.

.2 Compact without vibration up to 92%, in the opinion of the departmental representative on site, in accordance with the modified compaction energy test (270 kN.M/m³) for the first 300 mm.

.3 Compact up to 95 % according to the test with modified compaction energy (270 kN.M/m³) for the remaining 300 mm.

.4 The use of stone screening or equivalent is allowed for the fine adjustment (maximum thickness of 20 mm) of the contact of the seat with the bottom of the concrete tank.

.5 One method of handling tanks must be provided by the Contractor. In the case of the use of a crane, the following recommendations apply:

.1 Use a crane of sufficient capacity according to the weight of the different parts and the range required for the installation of the tanks at the desired location.

.2 Crane operators must have the required certifications according to provincial regulations.

.3 Ensure that the weight of the crane does not damage the access roads, otherwise, provide for the replacement of damaged elements.

.4 Ensure safe distances to nearby aerial facilities.

.5 The load capabilities - ELU (ultimate state bearing capacity) presented in the table below include a safety factor of 2. It is considered that the crane seats will be on the surface and the calculations have been made for a «Grove GMK5150L" type crane with 4 stabilizers. These capacities are valid for temporary lifting operation.

Leg size (4 legs/crane)	Permissible load bearing capacity (kPa)
1,0 x 1,0 m	23
1,5 x 1,5 m	32
2,0 x 2,0 m	41
2,5 x 2,5 m	51
3,0 x 3,0 m	60

.1 The following table includes the lift capacities witha 300 mm cushion of MG20 compacted to 95% of its optimal dry density:

Leg size	Permissible load bearing capacity (kPa)
1,0 x 1,0 m	85
1,5 x 1,5 m	95
2,0 x 2,0 m	105
2,5 x 2,5 m	115
3,0 x 3,0 m	125

.6 Make watertight seals at the entrance and exit of the septic tank by means of modular seals for wall crossings or waterproof rubber seals inserted into the concrete during the manufacture.

.7 Before proceeding with the complete backfilling, perform a test of the air diffusion system with approximately 300 mm of water as described in section 44 01 00 - Equipment – Process Mechanics and then a complete leak test of the tank in the presence of the Departmental Representative.

.1 Fill the septic tank to the level of the drainpipe and wait 24 hours.

.2 No leakage will be tolerated.

.3 If a leak occurs, remove the sealing materials, and put them back in place as directed by the Departmental Representative.

.8 Perform backfilling work in coordination with the tests required by the manufacturer and installer of the wastewater treatment equipment and in accordance with section 31 23 33.01 - Excavation, Trenching and Backfilling.

3.3 WATER

.1 The Entrepreneur must supply himself with water free of impurities (clear water / drinking water).

3.4 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 00 – Cleaning.

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

.2 Final cleaning: Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

.3 Waste management: sorting waste for reuse and recycling.

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

END OF SECTION

PART 1 GENERAL

1.1 SCOPE OF WORK

.1 The Contractor shall provide all materials, materials, labour, tools, machinery and ancillary work required for the complete and functional installation of all process mechanical equipment, machinery and piping and its accessories, as described in Division 44, the other sections of the tender document and as shown on the plans. The work also includes technical assistance to the Owner, provisional acceptance testing, commissioning testing and staff training, including equipment performance testing and, where appropriate, process testing.

.2 The Contractor is responsible for consulting and analyzing all plans and specifications to understand all the process mechanical work of the project that is also related to the following disciplines: civil and electrical.

.3 No discharge of wastewater into the environment must take place during the execution of the work. The Contractor must provide at its own expense all necessary measures to prevent and avoid any discharge of wastewater into the environment and ensure that the installation of wastewater treatment equipment is completed before starting the discharge of domestic wastewater to the treatment system. Leak tests of sanitary pipes shall be carried out as described in section 33 31 23 – Sewer Pipes and Valves) before the wastewater treatment system is put into service. Leak tests of prefabricated concrete tanks shall be carried out as described in section 33 36 00 – Wastewater storage tanks and section 44 01 00 – Equipment – Process mechanics) before the wastewater treatment system is commissioned.

.4 The Contractor shall, without limitation, include the following supplies and services as part of its mandate:

.1 Coordination of work with suppliers of equipment for the wastewater treatment system as described in the plans;

.2 Obtaining technical documentation and drawings for the preparation of shop drawings and all documentation related to wastewater treatment equipment;

.3 The ordering of equipment, the packaging of equipment and the delivery of equipment to the site;

.4 Unloading of equipment at the construction site;

.5 The provision of instrumentation as required by suppliers;

.6 Supply of spare parts;

.7 The proper installation of wastewater treatment equipment as described in the plans;

.8 The Contractor shall use a Contractor certified by the Wastewater Treatment Technology Provider for the installation of equipment specific to this treatment stream and as described in the plans;

.9 Coordination for the installation and commissioning of wastewater treatment equipment;

.10 The Contractor shall ensure that the Wastewater Treatment Technology Provider ensures the commissioning of the wastewater treatment equipment;

.11 Preparation and implementation of staff training and production of the operations manual;

.12 The provision of operations, maintenance manuals and final drawings ("as constructed").

1.2 GENERAL REQUIREMENTS FOR MATERIALS AND PROCESSES

.1 General

.1 Scope

.1 This specification defines the general requirements for the quality of materials used for mechanical equipment as well as those applicable, where applicable, to treatment processes.

.2 Reference standards

.1 Generally, and without limitation, the most recent version of the codes and standards published by the following organizations applies:

.1 CSA Canadian Standards Association

.2 AFBMA Anti-Friction Bearing Manufacturers Association

.3 AGMA American Gear Manufacturers Association

.4 AISI American Iron and Steel Institute

.5 EMEA Electrical and Electronics Manufacturers Association of Canada

.6 ANSI American National Standard Institute

.7 ASME American Society of Mechanical Engineers

.8 ASTM American Society for Testing and Materials

.9 AWWA American Water Works Association

.10 BNQ Standards of Bureau of normalization of Quebec

.11 CCE Canadian Electrical Code

.12 NBC National Building Code of Canada

.13 CSST Commission on Health and Safety at Work

.14 CWB Canadian Welding Bureau

.15 HY Hydraulic Institute

.16 IEEE Institute of Electrical & Electronics Engineers

.17 ISO International Standard Organization

.18 MMA Monorail Manufacturers Association

.19 MSS Manufacturers Standardization Society of the Valve and Fittings Industry

.20 NSF National Safety Foundation

.21 CGSB Canadian Government Standards Board

.22 REIC Regulation of Industrial and Commercial Establishments

.23 SAE Society of Automotive Engineers

.24 CPSS Steel Structure Painting Council

PART 2 PRODUCTS

2.1 SCREWS AND BOLTS

.1 Screws, bolts, nuts, fasteners and threads must comply with the requirements of CSA standards. All fasteners in contact with or near wastewater or sludge must be constructed of stainless steel of grade 316.

.2 The screws and bolts used must be manufactured according to the metric measurement standards in force in Canada and the province of Quebec.

.3 The equipment must be bolted to the frames and structures, the bolt head over the mechanisms to be connected in such a way that the bolts cannot come out of the holes even if there is a loss of the nut. Information on bolt tension and clamping limits shall be indicated on the Contractor's drawings, if applicable.

.4 The protrusion of the bolts beyond the nuts, after being tightly tightened, must be at least two (2) exposed threads without exceeding the value of one diameter. Unless otherwise specified, hexagonal nuts must be used.

.5 In the case of notched holes, washers should be installed with all nuts and bolt heads.

2.2 WELDS

.1 The design, execution and inspection of welds shall comply with the requirements of the most recent applicable standards, CSA, W 59 or ASME B31.1 as appropriate.

.2 Preferably, welds are performed in the manufacturer's workshop. Welds on aluminum should be carried out only in the workshop.

.3 The parts of the welded assemblies, whose parts are machined to ensure precise alignment, must undergo thermal expansion before machining.

.4 The results of non-destructive testing must be documented and submitted to the Representative during the manufacturing process.

2.3 BEARING LUBRICATION

.1 Oil-lubricated bearings must be equipped with housings and level indicators. Grease-lubricated bearings must be supplied with lubrication nipples and must be fitted with extension cords, if applicable.

.2 The equipment will be supplied with all bearings, bearings, etc., lubricated and ready to operate.

.3 All equipment must be provided with adequate protection against splashing oil or grease during normal operation.

.4 All oils in contact with drinking water or likely to come into contact with or contaminate drinking water must comply with NSF-61 standard.

2.4 ROTATING MECHANISMS

.1 All equipment equipped with rotating mechanisms such as belts, pulleys, chains, gears, couplings, etc., must be designed to operate under all load conditions, without shaking. Mechanisms that cannot be physically housed in envelopes must be equipped with protective devices to ensure the safety of operations and maintenance personnel.

.2 The selection of these rotating mechanisms must be done according to the standards defined by the AGMA.

2.5 VIBRATION

.1 Equipment subject to transmitting vibrations to the structure or buildings shall be supplied with shock absorbers capable of absorbing such vibrations.

2.6 NOISE

.1 The noise level produced during normal operation by a piece of equipment and measured within one (1) meter thereof shall not exceed 70 dBA, under the intended operating conditions, according to the measurement standards defined by the "International Standard Organisation (ISO), Recommendation R 495". In the event that the noise level generated by the equipment exceeds this value by 70 dBA. The Entrepreneur must, at his own expense, make the necessary correction (acoustic shelter, etc.).

2.7 MATERIALS OF MANUFACTURE

.1 In general, materials must comply with the following requirements or be of an equivalent nature, i.e. possessing properties similar to those of the specified materials and, if necessary, be certified by means of certificates of conformity.

.1 Structural Steel ACNOR G40.21M

.2 Structural Aluminum ASTM B 241 Alloy 6061-T6

.3 Ductile Iron STM A 48

.4 Stainless steel ANSI type 304 or 316

.2 All contact surfaces between two different metals must be separated by non-conductive materials, if there is a possibility of cathodic reaction.

2.8 CORROSION AND PROTECTION OF EQUIPMENT

.1 All parts of the equipment that are installed in a wet or corrosive environment or that are in contact with water, etc., must be designed to withstand corrosion by these elements for a period of at least five (5) years, either by the nature of the materials of manufacture, by the application of a proven protective coating or by covering with proven resistant materials. The recommended materials are specified in the quotation sections.

.2 In cases where coating protection is used, unless the protection method is specified in the special technical clauses, the equipment must be painted according to a paint system that ensures sufficient durability over time.

.3 The Contractor must guarantee that after a period of sixty (60) months, the degree of rust must be equal to or less than level 7 of the SSPC (Steel Structure Painting Council) scale for anti-rust paints.

2.9 BEARINGS AND BEARINGS

.1 The service life L 10 of any bearing, calculated according to AFBMA standards, must not be less than 100,000 hours.

2.10 FITTINGS, PIPING AND VALVES INTEGRATED INTO THE EQUIPMENT

.1 The class of pipes supplied must be established by the Contractor according to the conditions of service (temperature, pressures, etc.). However, CPV pipes cannot be used if the temperature of the conveyed fluid can exceed 25 °C

.2 All accessories accompanying the supplied piping such as fittings, seals, couplings, rings, sleeves, etc., must be made of the same type of material as the piping to which they are connected.

.3 For all piping that is an integral part of the equipment, the Contractor must also include the supports, stops and expansion joints required to ensure compliance with the requirements of the manufacturers of the type of pipe provided, depending on the maximum forces that may occur.

.4 All valves and valves supplied with the equipment must meet the requirements of AWWA, NSF61 or be of similar quality requirements. The materials of manufacture of these valves and valves must be specified by the Contractor according to the conditions of service (temperature, pressure, etc.).

.5 All valves, regardless of their diameter and type, whether motorized and/or automated or not, must be equipped with a manual operation mechanism (steering wheel, lever, etc.) including the required disengagement accessories if they are motorized and/or automated.

.6 All valves with a diameter of and more, whether motorized and/or automated or not, shall be equipped with a gear control mechanism with steering wheel.150 mm

2.11 QUALITY MANAGEMENT

.1 The Contractor shall establish, document, and implement, for this project, a quality program in accordance with CSA CAN3-Z299.4-85, ISO-9001 or equivalent.

.2 The "Quality Verification Document" of said program must be submitted by the Contractor within ten (10) days of the award of the contract.

.3 The manufacture of all equipment and products covered by this call for tenders will be subject to the quality control requirements of CSA CAN3-Z299.4-85, ISO-9001 or equivalent.

.4 The Contractor must submit to the Departmental Representative, when presenting the workshop drawings, the various documents relating to the inspections and tests that the manufacturers/suppliers, involved in the project, intend to carry out on the equipment in order to comply with the requirements prescribed in this tender document.

.5 The Departmental Representative must have access to the establishments of the Contractor and its subcontractors, as well as those of its manufacturers/suppliers, during working hours, for the purposes of monitoring and/or quality audit.

2.12 IDENTIFICATION OF PROCESS MECHANICS INSTALLATIONS

.1 General

.1 All parts of the equipment of the process systems as well as the piping must be clearly and legibly identified in the manner described below.

.2 The Contractor must submit, for verification by the Representative of theMinistry, a diagram of the equipment with the identification, the name, and the numbering that he proposes to use.

.3 This identification (name, numbering) must be the same everywhere, both on the plans, the equipment, and in the operating manual.

.4 Plates, strips, identification labels must be displayed prominently and not covered with paint or other. Unless otherwise indicated, identification plates, stripes and labels shall be white-faced and black-cored.

.5 Where insulation is required, identification must be affixed to the insulation.

.2 Equipment identification

.1 Manufacturer nameplates must be affixed to the equipment. These plates must indicate the name of the Manufacturer, the model, the serial number and, depending on the equipment, the power of the engines, the type of power supply, the capacity of the unit and any other relevant information.

.2 In addition to the Manufacturer's nameplates, all equipment such as valves, pumps, blowers, blowers, tanks, etc. must be identified by means of 50 mm polyethylene medallions. These medallions must comply with the Canadian Government Standards Board (CGSB) Standard (F) 24-GP-3a-1967 entitled "Code, Identification and Classification of Duct Systems".ϕ

.3 For equipment related to the transfer and treatment of water, the Contractor must use the following colors on medallions, panels, and identification labels:

.1 Primary color: yellow (hazardous product)

.2 Secondary color: purple (poison/radioactive)

.3 Letters and numbers: black

.4 On works of high flow or with a large number of equipment, the Contractor must use PVC panels for the identification of the main equipment, reserving the medallions for the secondary equipment of the same series. Signs must also comply with the CGSB standard listed above.

.3 Piping Identification

.1 All piping must be painted according to the applicable colour code described in the article "Equipment and Piping Finishes".

.2 In addition to this paint, the Contractor must complete the identification of all pipes, including stainless steel and CPV, with sticky yellow (primary) and purple (secondary) labels with black lettering and arrows indicating the nature and direction of flow of the transported product.

.3 The identification labels must be placed at regular intervals on the pipe, but not more than five (5) meters apart, so as to successively have a complete identification (letters and arrows) alternating with a single arrow.

.4 In particular, at strategic points (valves, valves, valves, tees, crossings, partition or floor sleepers, etc.), the above identification must be supplemented by an indication of the origin and destination of the product being transported, all according to the principle shown in the figures at the end of this section and described in the CGSB standard.

.5 Identification labels must comply with the CGSB standard referred to in the previous article and must be as manufactured by Signis or approved equivalent; their size must be appropriate to the outer diameter of the pipe to be identified; their position must allow quick identification by the personnel.

.4 Valves Identification:

.1 The Contractor must identify all valves by means of the same panels, medallions and labels, in the same way as for equipment as specified above in the sub-article "General" of the article "Identification of Process Mechanical Installations".

.5 Use of pictograms

.1 In its system identification scheme, the Contractor must use pictograms clearly indicating the position of the various safety equipment installed on the structures and other strategic points.

.2 These pictograms must also comply with the CGSB standard, and be as manufactured by Signis, or approved equivalent.

2.13 PROVEN PROCESSES

.1 Each of the treatment processes mentioned must meet the following requirements to be considered acceptable:

.1 Mechanical performance

.1 The mechanical performance of each of the process components must have been demonstrated during a period of at least two (2) years of use. In addition, each of the components must have been used for a period of at least one (1) year in an application similar to that proposed.

.2 Process efficiency

.1 The process must meet the performance testing objectives described in the process mechanics divisions (Division 44), and elsewhere in the tender document for each of the processes.

2.14 EQUIPMENT AND PIPING FINISHES

.1 Workshop treatment

.1 All ferrous metal process equipment as well as piping and ancillary parts (i.e. fittings, flexible seals, valves and valves) covered by the process mechanics divisions (Division 44) will receive a surface treatment and primer paint in the workshop. All equipment that includes a finishing coating in the manufacturer's standard product designation will be supplied with said coating.

.2 The surface preparation, the primer and the top finishing coat(s), carried out in the workshop by the manufacturer, must be compatible with the required service of the equipment as well as with the "local" operating conditions.

.3 No part or equipment in bronze, aluminum, stainless steel, galvanized steel, plastic and CPV should be properly cleaned after manufacture.

.4 Galvanizing will be carried out by hot immersion, after manufacture, with a zinc layer of at least 600 g/m², all in accordance with CSA Gj0164 standard.

.5 Pumps, motors or any other equipment and accessory parts (fittings, valves, etc.) may however be supplied with the manufacturers' standard finish if they meet the following requirements:

.1 The protection system selected must be of a class that allows adequate corrosion resistance for an average period (5 to 10 years) under conditions prevailing inside the building, in underground stations or outside, and it must be certified by a manufacturer with at least five (5) years' experience in protecting this type of equipment.

.2 Site treatment

.1 After their installation on the site, the Contractor will proceed to the "finishing" painting of the piping and equipment, according to the applicable color code.

.2 The type of paint and the final choice of colors for each system must be approved in advance by the Engineer.

.3 The number of coats of paint to be applied (minimum 2 coats) must ensure a total coating of the original paint of the equipment manufacturer. The type of paint for said top coat must be compatible with the finish of the equipment provided by the manufacturer. The application of a third coat of paint may be required by the CPA. The Contractor is then required to carry out this work at no additional cost.

.4 This paint treatment on site applies especially to all cast iron pipes and parts, valves, valves, fittings, flanges, supports, etc.

.5 Bronze, aluminum, galvanized steel, stainless steel, plastic and CPV parts will not receive any paint: these materials will have to be properly cleaned after installation.

.6 The copper piping will be cleaned with a stripper to remove all traces of grease and will receive two (2) layers of "urethane" varnish, compliant with CGSB 1-GP-176b.

.7 All aluminum parts in contact with concrete will receive, in the workshop, a layer of bitumentic paint, undiluted, according to the requirements of the CGSB 1-GP-108M, type 1 standard.

.8 The paint will need to be retouched at the attachment points, at the base brackets and plates, etc., where the paint has been damaged during transport or assembly of the equipment. The alterations must be made with paint identical to that originally applied to the equipment in accordance with the Contractor's instructions.

.3 Color coding:

PIPES - EQUIPMENT	COLOUR	N OF PAINTING°		
		C.I.L.	SICO N abandoned°	SICO New issue
Drinking water	Light blue	3938-7	2035-61	3027-41
Non-potable service water	Dark blue with "NOT DRINKABLE" *	4848-9	2030-53	SM 820
Hot service water	Medium blue	3941-9	2036-42	3028-32
Raw wastewater	Grey	4072-8	2167-12	SM 1008
Sand washing water	Ocher	4701-9	2093-64	3100-64
Sand	Rust	4700-9	2113-43	3084-53
Primary sludge	Brown brown	4671-2	2135-63	3194-43**
Recirculated sludge and excess sludge	Light brown	3072-8	2122-22	SQ 6569
Thickened sludge	Dark brown	4611-2	2117-63	3060-63**
Digested sludge	Black	4673-2	2178-63	SM 1347
Process overpressed air	Light green	3529-9	2066-13	SM 986
Control compressed air	Dark green	4788-5	2066-64	SQ 6741
Chlorine	Light yellow	3117-5	2086-34	SQ 6245
Ozone	Violet	4353-9	2016-22	SQ 9769
Alum	White	4574-7	2164-11	SM 833
Chemical products	Orange	2637-5	2104-34	SM 650
Polymers	Rose	2504-8	2007-12	3056-12**
Emergency equipment	Red	4596-4	2005-55	SM 736
Valves, flaps, etc.	Same color as the adjacent one			

N.B.: Building mechanics ducts and others according to the architect (without possible confusion with this code).

*To be labeled "*NOT DRINKABLE*" in places where this water is used.

**Suggested number: color not identical but close.

PART 3 EXECUTION

3.1 TANK DISINFECTION

.1 Not Used.

3.2 PLANS

.1 The plans indicate, in general, the location of the proposed pipes and equipment.

.2 Where the piping is indicated only schematically, its location shall be established in such a way as to maintain maximum vertical clearance (headroom) and in such a way as to impede as little as possible the use of the rooms in which it will be laid out.

.3 The location of pipes and equipment must respect the dimensions and dimensions shown in the plans; their location shall not be established on the basis of a scale reading on the said plans.

.4 The Departmental Representative may request the movement of equipment up to one (1) meter, if deemed necessary, at no additional cost.

.5 No additional costs will be allocated for the change(s) of passage of ducts, pipes, ducts, etc., which may be deemed necessary by the construction conditions.

.6 If the Contractor anticipates the need to issue additional sketches for clarification, it must notify the Departmental Representative at least fifteen (15) days prior to the execution of the work.

.7 All work or materials, shown in the plans and not described in the specification or vice versa, are part of this contract as well as all materials not indicated in the plans and specifications but necessary for the completion of the work.

3.3 EQUIPMENT

.1 It is understood by equipment, all the materials necessary for the erection of an element of the process. The materials composing this equipment must be complete and the Contractor will include any other element it deems necessary for the proper functioning of each unit.

.2 All equipment is built to ensure optimum performance. Each piece of equipment must be complete in its entity and must include each part or accessory necessary using the strongest materials and desirable characteristics so that intermittent or continuous operation is efficient and their maintenance easy and suitable. Therefore, materials must be chosen according to their specific use.

.3 All equipment and materials must be new, manufactured, assembled and factory-checked, ready for installation. They must not carry any visible or invisible damage that may cause its failure during the work.

.4 The Contractor shall provide the General Contractor with all diagrams, drawings, written instructions necessary for the proper installation of the equipment and any other information which, in the opinion of the Representative of theMinistry, would facilitate the work.

.5 A copy of these instructions must be given to the Departmental Representative prior to installation, for supervision of the work.

.6 Unless otherwise specified, the various items must be the standard product of a manufacturer and the parts necessary for maintenance must be always available. Equipment of the same nature must be supplied by the same manufacturer.

.7 The Contractor will be responsible for the unloading of the equipment arriving on the site, their inspection by theRepresentative of the Ministry, their storage, their installation, and their connection. Non-installed equipment will be stored under lock and key by the Contractor.

.8 If equipment is to be reassembled at the site, it must be reassembled by the Contractor, under the Supplier's supervision.

.9 If required, the lifting equipment required for the handling of the equipment, from the point of delivery to the installation, will be at the expense of the Contractor.

.10 The Contractor must ensure that the openings provided in the building for the entrance of large equipment are sufficient.

.11 No work such as pipes, conduits, etc., will be hidden until the Representative of theMinistry has inspected and approved it.

.12 The equipment must have the characteristics and dimensions appropriate for the places where it will be installed.

3.4 ELECTRICAL WORK

.1 All equipment driven by an electric motor must be connected by the Contractor, complete with their respective motor including their control panels.

3.5 MOTOR PUMP GROUPS

.1 Not Used.

PART 4 CLEANLINESS AND PROTECTION OF EQUIPMENT

.1 The Contractor must take all necessary precautions to protect the equipment and keep it clean.

.2 Upon completion of the work by this division, the Contractor must ensure that the interior and exterior of the systems are permanently clean and, if necessary, carry out the required cleaning. He must also remove all surplus materials, tools, equipment, and debris and leave the site in clean condition and in good condition, to the satisfaction of the Representative ofthe Ministry.

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 44 00 50 – Specific General Instruction – Process Mechanics.

.2 Section 33 36 00 - Wastewater storage tanks.

.3 Section 26 24 16.01 - Circuit breaker distribution panels.

1.2 SCOPE OF WORK

.1 This section concerns the complete and functional execution of all work required for the construction and commissioning of wastewater treatment system equipment, including, without limitation: manufacture, supply, transportation, unloading, installation, commissioning, testing, warranty, and operation until provisional acceptance of equipment including:

- .1 Dismantling of the existing sewage field with all related equipment and disposal of the waste in an appropriate disposal site, according to the laws and standards in force. The excavated material will be preserved.
- .2 RS-4 Control Manhole:
  - .1 Dismantling ofpumping equipment in with all related equipment including fastening accessories. Disposition of waste in an appropriate place of disposal, in accordance with the laws and standards in force. Give the pumps to the Departmental Representative Spillways and valves will be retained.
  - .2 Sealed unused outlets and holes left vacant by fastening accessories.
  - .3 Recommissioning of the 250 mm diameter outlet.
- .3 Interpretation Centre:
  - .1 Dismantling of the existing control panel and disposal of the waste in an appropriate disposal place, according to the laws and standards in force.
  - .2 Supply, installation, commissioning, connection, and programming to the existing alarm system of a new control panel of the pumping station including accessories, wiring and restoration of the wall to the satisfaction of the Departmental Representative.
  - .3 Supply, installation of a vent and anti-slip rings for fleets in the pumping station.
- .4 Administrative Centre at the reception (workshop):
  - .1 Dismantling of the existing control panel and disposal of the waste in an appropriate disposal place, according to the laws and standards in force.
  - .2 Supply, installation, commissioning, connection and programming to the existing alarm system of a new control panel of the pumping station including accessories, wiring and restoration of the wall to the satisfaction of the Departmental Representative
  - .3 Supply, installation of anti-slip rings for fleets in the pumping station.

.5 The supply, installation and commissioning of prefabricated concrete tanks in accordance with section 33 36 00 - Wastewater storage tanks (septic tank and biological reactor), including all openings, covers, accessories, process air piping, instrumentation, probes, controls, panels, wirings and connections required for a complete operation and functional.

.6 The supply, installation and commissioning of wastewater treatment equipment including air pumps, UV disinfection system and their controller.

.7 The supply, installation and commissioning of the control panels of the wastewater treatment system, allowing the control of equipment and the transmission of alarms to the existing intrusion alarm system.

.8 The power supply to the biological wastewater treatment system including buried electrical wiring and connection to the electrical distribution panel of technical boxes;

.9 The supply and installation of all piping, including, but not limited to, valves, accessories, instrumentation, and connections for all equipment for complete and functional operation.

.10 The supply and installation of all air ducts between the biological wastewater treatment reactor and the technical enclosures containing the air pumps;

.11 The dismantling or abandonment with injection of concrete grout, according to the plans and indications of the Departmental Representative, of the existing wastewater pipes associated with the old wastewater treatment system.

.1 Disposal of waste in an appropriate disposal place, according to the laws and standards in force.

.12 The supply and installation of all wastewater pipes and accessories including rigid insulation and re-waterproofing of the dike, if any, but not limited to:

.1 Between the existing discharge pipe from the administrative centre at the reception and the septic tank;

.2 Between the existing discharge line from the interpretation centre and the septic tank;

.3 Between the septic tank and the biological wastewater treatment reactor;

.4 Between the wastewater treatment reactor and the pond.

.2 The supply and installation of a valve downstream of the discharge of the water treatment system, but downstream of the non-aerated pond.

.3 Notwithstanding the scope of the foregoing, the Contractor is responsible for the installation and installation of all process equipment to the plans and/or described in this specification. He is responsible for the setting of this equipment, its incorporation and attachment to the structures, the definition of concrete forms required for the process mechanics and its installation.

.4 The Contractor must provide the facilities, equipment and apparatus required for the installation work, including temporary handling, and pumping equipment as well as labour.

.5 During the work, the Contractor is responsible for any damage to the existing infrastructure and must repair it at its own expense during the work to the satisfaction of the Departmental Representative

.6 The Contractor is responsible for coordinating the work and supply of the various parts with the Supplier of the advanced secondary treatment system and other subcontractors (tank manufacturer, electrician, etc.).

.7 The Contractor is responsible for ensuring that the precast concrete tanks are clean, watertight, and dry during the factory and on-site work for the assembly of the various components by the Wastewater Treatment System Supplier.

.8 The Contractor is responsible for consulting all plans and sections of specifications to understand all the components required for the proper and safe operation of the process mechanical equipment.

.9 It will be the Contractor's responsibility to install sufficient anchorages and pedestals to ensure that the pipes/equipment/accessories will be supported and retained perfectly in position considering the pressures and forces that may be exerted on these pipes/equipment/accessories as well as being responsible for attaching the equipment to the walls.

.10 The Contractor shall ensure that all materials, equipment, and labor are provided to provide power supply and control of all related instruments and equipment.

.11 Thus, the Contractor must provide, without limitation, the power supply, cables and ducts and any other equipment and work necessary for the proper functioning of the equipment provided for in this section.

.12 The distribution panel is specified in the "Electricity" section of the quotation (26 24 16.01 - Distribution panels with circuit breakers) and the Contractor must provide all necessary connections between the control panel(s), the distribution panel and other equipment.

.13 The Contractor shall provide covered workshop drawings for all the above work as described in section 01 33 00 – Documents and Samples to be Submitted.

1.3 REFERENCES

.1 ASTM International

.1 ASTM C117, Standard Test Method for Material Finer Than (No. 200) Sieve in Mineral Aggregates by Washing.0.075 mm

.2 ASTM C136, Standard Method for Sieve Analysis of Fine and Coarse Aggregates.

.3 ASTM D1557, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m^3))

.4 Steel: A500 GRADE B, cold-formed welded and seamless carbon steel structural tubing

.5 Galvanization: A123M, Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products, covers individual steel pieces

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-8.1, Wire Mesh Control Sieve, non-metric

.2 CAN/CGSB-8.2, Wire Mesh Test Sieves, metric

.3 CSA International

.1 CSA A23.1/A23.2, Concrete - Constituents and Workmanship / Tests and standard practices for concrete.

.2 CSA A23.4, Precast concrete: components and execution of the work.

.3 CSA B66, Requirements for the design, constituent materials and manufacture of prefabricated septic tanks and holding tanks.

.4 Steel: CSA G40.21, General Requirements for Rolled or Welded Structural Steel/Structural Steel

.5 Galvanization: G164 M-92, Hot Dip Galvanizing of Irregularly Shaped Articles

.6 Welding: CSA W59-M1989, Welded Steel Construction (Metal Arc Welding)

1.4 DOCUMENTS TO BE SUBMITTED FOR APPROVAL/INFORMATION

.1 Submit the required documents and samples in accordance with section 01 33 00 – Documents and samples to be submitted.

.2 Data sheets

.1 Submit the required data sheets as well as the manufacturer's instructions and documentation regarding the septic tank, the biological reactor tank and the control panel as well as all advanced treatment system equipment.

.2 Submit the required data sheets as well as the manufacturer’s instructions and documentation for the pumping station control panel x.

.3 The data sheets must indicate the characteristics of the products, the performance criteria, the dimensions, limitations, and finish.

.3 Workshop drawings

.1 Workshop drawings submitted must bear the seal and signature of a competent engineer recognized or authorized to practise in Canada, in the province of Quebec.

.2 Shop drawings: conform to CSA A23.4.

.1 Indicate on the drawings the following:

.1 Calculations relating to the elements designed by the manufacturer;

.2 Tables and bending diagrams for steel reinforcement parts;

.3 The curvature of the elements;

.4 Formwork;

.5 Nomenclature of finishes;

.6 Handling and installation methods;

.7 Storage facilities;

.8 Openings, sleeves, returned parts and related reinforcement elements;

.9 Pump performance curves.

.4 Calculation notes

.1 The Contractor must provide, as part of the engineering mandate, for approval by the Departmental Representative, the calculation notes demonstrating the sizing of the wastewater treatment technology equipment and the design bases selected.

.5 Performance Report

.1 The Contractor must submit, for approval by the Departmental Representative, the performance report of the wastewater treatment system.

.6 Operation and maintenance manuals

.1 The Contractor shall submit, for approval by the Departmental Representative, following the conclusion of the performance tests, all complete operation and maintenance manuals for all equipment in the wastewater treatment system.

.2 The Contractor shall submit, for approval by the Departmental Representative, following the conclusion of the performance tests, all complete operation and maintenance manuals for all pumping station equipment.

1.5 HEALTH AND SAFETY

.1 This section is complementary to section 01 35 29.06 – Health and safety.

.2 General

.1 The Contractor must obtain all installation manuals specifying the health and safety measures to be followed from the various suppliers to manage its activities so that the health and safety of the public and site personnel as well as the protection of the environment always takes precedence over issues related to costs and schedule of work.

.3 References

.1 Canada Labour Code, Part II, Canada Occupational Safety and Health Regulations.

.2 Canadian Standards Association (CSA).

.3 Workplace Hazardous Materials Information System (WHMIS) /Health Canada.

.1Formerforming Sheet (MSDS).

.4 Act respecting occupational health and safety, R.S.Q. Chapter S-2.1.

.5 Safety Code for Construction Work, S-2.1, r.6.

1.6 QUALITY ASSURANCE

.1 Manufacturers and installers of precast concrete elements must meet the requirements of CSA A23.4.

1.7 TRANSPORTATION, STORAGE AND HANDLING

.1 Transport, store and handle materials and equipment in accordance with section 01 61 00 - General Product Requirements and the manufacturer's written instructions.

.2 Delivery and Acceptance: Deliver materials and materials to the job site in their original packaging, which must bear a label indicating the name and address of the manufacturer.

.3 Storage and handling

.1 Store materials and equipment so that they do not rest on the ground, in a clean, dry and well-ventilated place, in accordance with the manufacturer's recommendations.

.2 Store tanks, technical housings and pumping station panels to protect against marks, scratches, and scratches.

.3 Replace damaged materials and equipment with new materials and equipment.

1.8 EQUIVALENCE

.1 This section takes precedence over the other sections of equivalence to the estimate.

.2 The supplier of the wastewater treatment unit is fully responsible for the supply and proper operation of all equipment described in this section. The Entrepreneur must, however, ensure that all the parts and works to build the works have been considered in an item of his tender.

.3 The Entrepreneur must present his price with the equipment specified in this quote and if he wishes, he may propose an alternative equivalence by indicating when submitting the bid the credits allocated for the customer. The engineering costs related to the analysis of the equivalence request will beinvoiced to him. Anestimate of its costs may be provided if a request for equivalence is submitted.

.1 The proposed equivalent technology shall allow, but is not limited to:

.1 meet design criteria;

.2 be installed without an additional pumping station;

.3 be equipped with two tanks.

.4 The Contractor will have to demonstrate that the equivalence alternative will ensure an adequate performance that meets the release requirements presented in the next section. The Contractor shall bear the costs incurred for the modifications to be made to the plans and specifications if another supplier is proposed in equivalence. The Contractor must submit revised plans, signed and sealed by an OIQ member engineer in workshop drawing. In addition, the Contractor will be responsible until the completion of the work for the proposed equivalence alternative including detailed engineering for the fitting out of the equipment for the treatment of wastewater in the proposed site. No annex buildings will be accepted. The Contractor must submit in a workshop drawing the layout of the equipment for the treatment of wastewater for approval.

.5 The Departmental Representative will not be required to accept equivalencies if they do not comply with the principle of processing, appearance requirements, transaction requirements or specified products. In addition, the costs of analyzing the equivalence proposal will have to be

paid by the Entrepreneur according to the evaluation of the efforts by the Departmental Representative

PART 2 PROCESSESSING CHAIN

2.1 DESCRIPTION

.1 Wastewater treatment for Cap Tourmente NWA must be of the advanced secondary type with a capacity of 22.25 m^3/d with discharge into the unaerated pond present on the site. The wastewater treatment system must consist of the following equipment:

.1 One (1) prefabricated reinforced concrete septic tank with a minimum effective volume of 51.2 ^{m3}, including two (2) pre-filters;

.2 One (1) prefabricated reinforced concrete biological wastewater treatment reactor with a minimum effective volume of 51.2 ^{m3} with aeration system, recirculation system, media and all accessories specific to the Technology Provider;

.3 One (1) UV disinfection system including two (2) lamps;

.4 Modification of the two (2) discharge pipes and one (1) discharge pipe to the unaerated pond (see civil plan).

2.2 FLOW RATES TO BE PROCESSED

.1 The selected design flow rates are presented in the following table:

Table 1 – Selected Design Flow Rates

Debit	Unit	Value
Design flow	m^3/d	22,25
Hourly peak factor used	-	9
Hourly peak flow	L/s	1,75

2.3 LOADS TO BE PROCESSED

.1 The selected design loads are presented in the following table:

Table 2 – Selected Design Costs

Parameters	Securities	
	Concentration, mg/L	Load, kg/d
DBO_5	400	8,900
MY	300	6,675
Total nitrogen	125	2,781
Total phosphorus	10	0,223

2.4 REQUIRED PROCESSING PERFORMANCE

.1 The quality of treated water must meet at least the following concentrations:

Table 3 – Expected Treated Water Quality

PARAMETERS	CONCENTRATION	PERIOD
DBO_5	< 15 mg/L	Annual
MY	< 15 mg/L	Annual
Fecal coliforms	< 200 UFC/100 mL[1]	May[1] to October 31
	< 50 000 UFC/100 mL	November 1 to April 30
NH_4	< 1,25 mg/L	Annual

[1] values after reactivation (< 20 CFU/100mL before reactivation)

PART 3 PRODUCT

3.1 IMPROVEMENT OF EXISTING PUMPING POSTS

.1 Interpretation Centre Pumping Station:

.1 Installation of four (4) stainless steel anti-slip rings.

.2 Installation of a stainless-steel vent with a nominal diameter of Ø100 mm with galvanized steel wall base, with a minimum length of 2 m and with a cap including an activated carbon air filter

.1 Supply of activated carbon in a container suitable for storage in sufficient volume to make 5 replacements of the contents of the air filter.

.3 The Contractor must provide for the replacement of the control panel of the lift pumps to be installed in the interpretation centre including the dismantling of the existing panel. The Contractor must also provide wiring, ducts, CPV ducts for electrical connection and control, PLCs, and starters (if required), accessories and any other equipment required for the full operation of the water lift system in order to obtain a complete system that is fully autonomous and functional. The connection to the existing alarm system will also have to be carried out.

.4 The control panel of the Barnes duplex pumping station model 4SE-4524L and current at full load of 5.8 A shall be equipped with the following components, but not limited to:

.1 Available space: 1.2m x 0.9m (height x width)

.2 Power supply to the control panel via the existing distribution panel (1 circuit breaker 240V, 1 phase, 60A);

.3 NEMA 4 case;

.4 Voltage transformer for control power supply;

.5 Control fuse;

.6 Visual and audible alarm;

.7 Alarm relay (2 zones):

.1 Zone 1 (urgent alarm)

.1 High level

.2 Zone 2

.1 Low level (stop pumps);

.2 Pump defects;

.3 Fleet defects;

.8 Each pump will be equipped with:

.1 Manual/Off/Automatic Selector;

.2 Thermomagnetic circuit breaker;

.3 Contactor;

.4 Display of pump overloads;

.5 Walking time totalizer;

.6 Event counter;

.7 Protection on high temperature;

.8 Protection on moisture;

.9 Indicator light working status (on, fault).

.9 Connecting terminal block;

.10 Separation of the panel for control and power supply section;

.11 Indoor location;

.12 Number of pumps: Two (2) pumps;

.13 Method of use: On request (fleets);

.14 Certification CSA.

.5 Spare part:

.1 None.

.2 Pumping station of the administrative building near the reception:

.1 Installation of four (4) anti-slip rings in stainless steel.

.2 The Contractor must provide for the replacement of the control panel of the lift pumps to be installed in the administrative building near the reception including the dismantling of the existing panel. The Contractor must also provide wiring, ducts, CPV ducts for electrical connection and control, PLCs, and starters (if required), accessories and any other equipment required for the full operation of the water lift system in order to obtain a complete system perfectly autonomous and functional. The connection to the existing alarm system must also be made.

.3 The control panel of the duplex pumping station for ABC brand pump model XCVBB and current at full load of 123123123 A shall be equipped with the following components, but not limited to:

.1 Available space: 0.6m x 0.45m (height x width)

.2 Panel power supply via: 120/240V? TO BE DETERMINED

.3 NEMA 4 case;

.4 Voltage transformer for control power supply;
.5 Control fuse;
.6 Visual and audible alarm;
.7 Alarm relay (2 zones):
.1 Zone 1 (urgent alarm)
.1 High level
.2 Zone 2
.1 Low level (stop pumps);
.2 Pump defects;
.3 Fleet defects;
.8 Each pump will be equipped with:
.1 Manual/Off/Automatic Selector;
.2 Thermomagnetic circuit breaker;
.3 Contactor;
.4 Display of pump overloads;
.5 Walking time totalizer;
.6 Event counter;
.7 Protection on high temperature;
.8 Protection on moisture;
.9 Indicator light working status (on, fault).
.9 Connecting terminal block;
.10 Separation of the panel for control and power supply section;
.11 Indoor location;
.12 Number of pumps: Two (2) pumps;
.13 Method of use: On request (fleets);
.14 Certification CSA.
.4 Spare part:
.1 None.

3.2 SEPTIC TANK

.1 Supply, install and commission a precast reinforced concrete septic tank with a minimum effective volume of 51.2 m³, with an external length of at least 9.8 m, an external width of at least 3.35 m and a height of at least 2.66 m, excluding access chimneys in accordance with section 33 36 00 - Wastewater storage tanks.

.2 The septic tank must comply with the recommendations of the Guide for the Study of Conventional Domestic Wastewater Treatment Technologies and be equipped with three (3) 750 mm diameter visiting chimneys and insulated fiberglass sealed lids. The chimney must have at least 150 mm of clearance to install equipment. The septic tank must be waterproof.

.3 The septic tank shall be equipped withtwo (2) pre-filters with 1.6 mm filtration holes with a total minimum capacity of 78 m³/d. A high-level fleet will have to be installed on a pre-filter and connected to the alarm system in the technical box.

.4 The septic tank must be equipped with a CPV vent with a nominal diameter of 100 mm equipped at its end with a device preventing water infiltration (gooseneck or tee) and an anti-vermin grid(s).

.5 The piping required for the biological wastewater treatment system must be integrated into the upper slab.

.6 The septic tank must be clean, waterproof, and dry during factory and construction work.

.7 The height of the maximum embankment should not exceed 1 meter.

.8 The Contractor must submit the plans signed and sealed by an engineer who is a member of the Ordre des ingénieurs du Québec (OIQ) of the precast concrete septic tank.

3.3 BIOLOGICAL REACTOR

.1 Supply, install and commission a prefabricated reinforced concrete tank serving as a biological reactor including: the aeration system, vents, recirculation pump, gravity UV disinfection system as well as all necessary accessories for a complete and functional system as offered by Bionest or approved equivalent.

.2 Supply, install and commission a precast reinforced concrete septic tank with a minimum effective volume of 51.2 m³, with an external length of at least 9.8 m, an external width of at least 3.35 m and a height of at least 2.66 m, excluding access chimneys in accordance with section 33 36 00 - Wastewater storage tanks.

.3 The biological reactor must comply with the recommendations of the Guide for the Study of Conventional Domestic Wastewater Treatment Technologies for Septic Tanks and be equipped with two (2) 750 mm diameter visiting chimneys, a 900 mm diameter visiting chimney for the downstream end where the UV will be installed, and insulated fiberglass sealed covers. The biological reactor must be leakproof.

.4 The biological reactor must be clean, waterproof, and dry during factory and on-site work.

.5 The height of the maximum embankment should not exceed 1 meter.

.6 The biological reactor shall be equipped with a 200 mm ventilation line opening with a device at its end to prevent water infiltration (gooseneck or tee) and an anti-vermin grid(s).

.7 The biological reactor shall include a medium for the fixation of bacterial cultures to a minimum quantity of 92,5 m^2/m3 (effective liquid volume) equivalent to a total area of 4 734,2 m² (effective liquid volume), the ventilation system, the inlet and outlet nannies, the recirculation pump, pipes and electrical conductor.

.8 Two (2) recirculation pumps will be installed at the reactor outlet and will ensure flow recirculation at a rate of 2.5 to 1, i.e. a flow rate of +/- 38.6 L/min. The recirculation flow will be routed to the head of the reactor.

.9 The Contractor must submit the plans signed and sealed by an engineer who is a member of the Order of Engineers of Quebec (OIQ) of the precast concrete biological reactor.

.10 The Contractor must submit the plans signed and sealed by an engineer who is a member of the Order of Engineers Of Quebec (OIQ) for the internal components, Bionest, of the biological reactor.

3.4 VENTILATION SYSTEM

.1 The Wastewater Treatment Technology Provider shall design and supply the air pumps required to ensure the operation and performance of the proposed wastewater treatment system.

.2 Supply twelve (12) air pumps providing 200 L per minute at a pressure of 2.9 PSI, powered on 110 Vac/1 phase/60 Hz, 2.3 A (200W) to power the 36 m of diffusers at an air flow of 60.69 L/min/m @ 3.6 PSI. Thermal protection must be included and a 1/8" connector for alarm. The dimensions must allow installation in two prefabricated aluminum housings, i.e. 256 mm by 200 mm and 222 mm in height

.3 The air pumps will have to be installed on a HDPE shelf allowing the installation of the air pumps in the aluminum box.

.4 The wastewater treatment technology provider must submit for approval in a shop drawing the design and technical specifications of the proposed air pumps.

.5 The Supplier shall design and install the line for connecting the air pumps and air diffusers. The driving is necessary to ensure a minimum pressure drops.

.6 Spare parts:

.1 Two (2) air pumps.

.2 Two (2) diaphragm kits for air pumps.

3.5 UV DISINFECTION SYSTEM

.1 Provide a complete UV disinfection system to ensure the removal of faecal coliforms below 200 CFU/100 ml.

.2 The UV system will consist of two (2) units of gravity UV lamps will be powered by a 110-240 Vac/1phase/60 hz power supply. The power consumption of a lamp and controller should be 130 W. The maximum instantaneous flow rate is 27 L/min per lamp, for a total of 54 L/min. The system shall include an end-of-life indicator, a system status indicator and a 304 stainless steel UV chamber dimension, with a diameter of 10 cm by 112.5 cm.

.3 The Wastewater Treatment Technology Provider must submit, for approval by the Departmental Representative, the Sizing of the UV reactors, the redundancies in place (if

required), the guaranteed flow rates and the technical specifications of the equipment including the required controllers and accessories.

.4 The providers must also submit for approval, as a workshop drawing, the proposed layout drawings as well as a process diagram including the chosen sizing.

.5 Spare parts:

.1 Two (2) sets of quartz sleeves and UV lamps.

3.6 INENTILATION

.1 Ventilation pipes on the septic tank and the biological reactor must be set up.

.2 This pipe network must be built underground. The pipes must offer a minimum downward slope of 1% to the tanks in order to allow condensation to flow. An anti-vermin device must be provided.

3.7 BOLTS AND FLANGES

.1 All bolts will be made of 316L stainless steel, regardless of the different details, elsewhere in this document. Flanges in dry permanent condition will be made of galvanized steel and flanges in submerged/wet conditions will be made of 316L stainless steel or CPV, as required.

3.8 SAMPLERS

.1 Provide a modified peristaltic pump type instant sampling pump that can be installed on a drill. The pump head is standard style that can accept flexible tubing type with an inner diameter of 4.8 mm and compatible with a fluted connection of 3/16 inches.

.1 All related equipment including but not limited to sampling tubes, anchors, a battery drill and its charger and cleaning products.

3.9 TECHNICAL BOXES

.1 Supply and installation of two technical aluminium housings located near the biological reactor of approximate size of 1.5 m high then 0.9 m wide and 0.45 m deep.

.1 These technical boxes will have to be installed on screwed galvanized steel piles. The Contractor must supply and install the piles necessary to support a structure of 200 kg sufficient to ensure the stability of the housings to the environmental conditions of the site. The latter must determine the number and specifications of the model according to the manufacturer's recommendations according to the torque applied during the insertion of the piles.

.2 All components of the Wastewater Treatment Technology Provider must be installed in the two (2) boxes provided.

.3 The Contractor must submit in a workshop drawing, for approval by the engineer, the final layout of the equipment to be installed in the boxes. Including the installation of panels

allowing the support of the components, the details of materials must be provided in the foundation, exterior finish or other required.

.4 The Contractor must seal the holes identified for this purpose in the technical equipment to avoid freezing and water infiltration.

.5 The Contractor is responsible for providing the electrical outlets and connections as required to the electrical section of the quote.

.6 The Contractor must leave sufficient space heated to more than 5 ° C and ventilated, for the installation of an alarm panel with a size of 30 cm by 35 cm. The contractor must plan for connections to the future system. Below is the non-exhaustive list of inputs of this alarm box:

.1 Entries.

.1 High level of septic tank.

.2 Low pressure of air pumps.

.3 UV #1.

.4 UV #2.

3.10 LIMITATION OF SUPPLY OF BIONEST COMPONENTS

.1 Bionest supplies and installs the following components. The installation of certain components must be coordinated with the Contractor, among others, surface preparation, insulation and backfill for the installation of the air duct. Please refer to the Bionest installation specifications for more details.

.1 Septic tank:

.1 High-level fleet and electric conductor.

.2 Biological reactor (Bionest reactor)

.1 Supplier's own media;

.2 Ventilation system;

.3 Entrance and exit nannies;

.4 Recirculation pump, driving and electrical conductor;

.5 Electrical conductor for recirculation pump.

.3 Outside:

.1 Ventilation duct.

.2 Tank ventilation line.

.4 Technical boxes (2):

.1 Ventilation system.

.1 Air pumps (12)

.2 UV disinfection system (2 lamps) and electrical conductor.

.3 Integrated pumping station control panel.

.4 Alarms related to the Technology Supplier's components and relay to the Customer's system.

.5 Electrical distribution panel.

.2 The Contractor is responsible for the supply, installation, and connection of the following electrical components:

.1 Power supply to components.

.2 All electrical ducts necessary for the proper functioning of all equipment in the treatment system.

.3 The Contractor is responsible for routing the various ducts and conductors inside the boxes and making connections to the components.

PART 4 EXECUTION

4.1 EXAMINATION

.1 Verification of conditions: Before proceeding with the installation of equipment, ensure that the condition of surfaces/supports previously implemented under other sections or contracts is acceptable and allows the work to be carried out in accordance with the manufacturer's written instructions.

.1 Make a visual inspection of the surfaces/supports in the presence of the Departmental Representative

.2 Immediately inform the Departmental Representative of any unacceptable conditions detected.

.3 Begin installation work only after correcting unacceptable conditions and receiving written approval from the Departmental Representative

4.2 INSTALLATION

.1 Install concrete tanks as indicated in section 33 36 00 - Wastewater storage tanks

.2 Make watertight seals at the inlet and outlet of prefabricated tanks and perform leak tests.

.3 The Entrepreneur must coordinate the necessary openings and sleeves with other disciplines.

.4 Tanks must be installed in a place free of motorized traffic.

.5 The height of the chimneys must be adjusted so that the final earthworks ensure that surface water does not drain to the visiting openings.

.6 The openings of the tanks must have a minimum clearance, without friable backfill materials, ensuring the handling of the visiting covers without the materials being likely to fall into the tank.

.7 Install equipment according to manufacturers' guidelines.

.8 Electrical wiring, if necessary, should be the responsibility of the electrical contractor. Wiring must be carried out in accordance with the manufacturer's instructions and applicable local, provincial and national codes.

.9 The septic tank and biological reactor must be filled with clear water (drinking water) before commissioning. The contractor must consider that no water source is available on the site and must provide for filling with an external source.

4.3 WATER

.1 The Entrepreneur must supply himself with water free of impurities of clear water (drinking water).

4.4 CLEANING

.1 Cleaning during work: carry out the cleaning work in accordance with section 01 74 11 - Cleaning.

.1 Leave the premises clean at the end of each working day.

.2 Final cleaning: remove surplus materials/materials, waste, tools, and equipment from the site in accordance with section 01 74 11 – Cleaning

4.5 GUARANTEE

.1 For pump control panels, the 12-month warranty period is extended to (2) years (24 months) from the date of provisional acceptance. The Contractor must guarantee the system against defects in materials and workmanship.

.2 For advanced secondary processing technology, the warranty period of 12 months for certain items is extended from the date of provisional acceptance as follows:

.1 system components for a period of two (2) years (24 months);

.2 peripheral components for a period of one (1) year (12 months);

.3 The biological reactor media for a minimum period of ten (10) years;

.4 Labor for a period of one (1) year.

.3 The warranty shall cover parts, labor, travel, and subsistence expenses paid by the Supplier to provide on-site services authorized by the Departmental Representative. The warranty must be provided by the supplier of the equipment and not by a third party.

PART 5 INSTALLATION, COMMISSIONING AND PERFORMANCE TESTS

5.1 GENERAL

.1 Protocols, procedures, and test reports to be submitted to the Departmental Representative for approval must include the acceptance criteria for each test.

.2 When the tests are carried out, the results shall be annotated in the test report as the tests are carried out. All test reports must be signed by the Supplier's qualified manager.

.3 All tests must be carried out in the presence of the Departmental Representative Test reports must be submitted immediately after the testing is conducted to the Contractor for validation by the Departmental Representative.

.4 For each test that does not present satisfactory results, the Contractor must transmit for validation to the Departmental Representative within a period not exceeding five (5) days, what it intends to do as corrective action and specifying the impacts on the schedule of work of the Contractor's contract.

.5 The Contractor must give forty-eight (48) hours' written notice to the Departmental Representative prior to the scheduled date of each trial.

.6 The Contractor shall provide and provide the test materials, apparatus and equipment and labour required to perform the tests and pay all costs therefor. The Contractor shall bear all costs of the tests, including the resumption of tests and those of the refurbishment of the equipment.

.7 The Contractor is responsible for providing and following the submitted test schedule with its protocol and for making the necessary arrangements for each test so as not to unduly delay or prolong the tests.

.8 If any equipment does not meet the Supplier's data or the performance specified during a test, the Contractor must replace, as soon as possible, the defective equipment and pay all costs incurred by such replacement.

.9 The order of activities, proposed for installation by the Contractor and for commissioning and performance testing by the Contractor, is presented in the following table.

Table 4 – Summary of Installation, Commissioning and Performance Testing Activities

ACTIVITIES	DURATION	RESONSABLE
INSTALLATION		
Unloading of wastewater treatment equipment	To be determined by Entrepreneur	Entrepreneur
Installation of equipment for wastewater treatment	To be determined by Supplier	Supplier of advanced secondary processing technology
Inspection and examination of installed equipment		Provider
List of installation deficiencies		Provider
Correction of installation deficiencies		Entrepreneur
Installation Approval		Provider
START-UP		
Pre-operational audits		Supplier and Contractor

ACTIVITIES	DURATION	RESONSABLE
Corrections following pre-operational checks		Supplier and Contractor
Commissioning of wastewater treatment equipment	To be determined by Supplier	Provider
Start-up test for wastewater treatment		Supplier and Contractor
PERFORMANCE TESTS		
Performance testing for wastewater treatment	Following a minimum normal use period of four (4) to six (6) weeks (Spring 2023)	Supplier and Contractor

5.2 START-UP

.1 All equipment will need to be checked and tested to ensure compliance with commissioning protocols produced by the wastewater treatment technology provider.

.2 During commissioning including start-up tests and continuous tests, the Customer shall bear the cost of energy.

.3 Start-up test

.1 Start-up tests must be carried out on the complete wastewater treatment system.

.2 After the installation and mechanical verification of the wastewater treatment equipment, the Supplier shall notify the Contractor seven (7) days before the start of the start-up tests.

.3 Start-up tests will be the responsibility of the Supplier. The Contractor must, however, provide the manpower for the operation of the equipment as well as any elements required during the start-up tests. However, the Entrepreneur remains fully responsible for the processing equipment supplied and its operation during the start-up tests.

.4 The start-up tests shall be carried out by simulating as far as possible all operating and emergency conditions, including verification of the hydraulic profile and flow at maximum flow as well as pressure drops through the piping.

.5 The performance of the systems must be recorded by the Supplier and all test reports carried out must be provided to the Contractor for approval by the Departmental Representative.

.6 If, in the opinion of the Departmental Representative, the start-up tests show that the equipment, or a portion of the equipment, fails to meet the requirements of the technical specification, the Contractor shall modify or replace, at its own expense, any defective part of the equipment until such time as the equipment meets the requirements of this specification.

.7 Following the start-up tests, the Supplier shall issue a certificate of conformity to the Contractor, for approval by the Departmental Representative, setting out the requests for corrective action and demonstrating that the solutions have been found or are in the

process of being found. This certificate must be submitted with its application for authorization to the Contractor to carry out the continuous tests.

5.3 PERFORMANCE TESTING

.1 After carrying out the start-up tests, the Contractor must demonstrate that the equipment meets the performance criteria of the technical specification.

.2 The Contractor must carry out performance tests of the complete wastewater treatment system.

.1 Performance tests cannot be carried out before there-opening of the site scheduled for spring 2023.

.3 Performance testing must be performed by the Supplier according to a testing protocol that it must submit for approval by the Departmental Representative. This protocol should describe the objectives and methodology of the trials.

.4 A complete report must be submitted by the Supplier to the Contractor, for approval by the Departmental Representative, containing all the results obtained during the performance tests. The report summarizes:

.1 The performance testing protocol;

.2 The operating conditions recorded during the tests and the modifications and justifications for deviations from the previously approved protocol;

.3 Presentation of results with interpretation and discussion of results;

.4 Conclusions and recommendations.

.5 If the results of the performance tests do not comply with the established requirements, the Contractor must make the required modifications at its own expense to achieve the advertised performance, to the satisfaction of the Departmental Representative Provisional acceptance of the Contractor's contract is not pronounced if the results of the performance tests do not meet the established requirements.

.6 In the event of a dispute between the parties as to the results of the performance tests, and at the request of the Departmental Representative, these must be redone by an independent firm. The costs thus incurred will be borne by the party in default.

.7 The Contractor must conduct performance testing to verify that the performance criteria required by the Technical Specification are met.

.8 The Contractor must carry out hydraulic tests to demonstrate that the unit capacity of the equipment supplied meets the flow requirements according to the requirements of the technical specification.

.9 All costs required for the performance testing are the responsibility of the Supplier.

.10 The following parameters shall be measured at the frequency indicated in the following table during each test period:

Table 5 – Monitoring Parameters During the Wastewater Treatment Test Period

PARAMETER	UNIT	RAW WATER	TREATED WATER	FREQUENCY
Temperature	°C	X	X	One (1) time (One-off)
pH		X	X	One (1) time (One-off)
MY	UCV	X	X	One (1) time (One-off)
DBO_5C	mg/L	X	X	One (1) time (One-off)
Total nitrogen	mg N/L	X	X	One (1) time (One-off)
Ammoniacal nitrogen	mg N/L	X	X	One (1) time (One-off)
Total phosphorus	mg P/L	X	X	One (1) time (One-off)
Fecal coliforms	UFC/100 mL	X	X	One (1) time (One-off)
Alkalinity	mg $CaCO_3$/L	X	X	One (1) time (One-off)
Hardness	mg $CaCO_3$/L	X		One (1) time (One-off)
Do	mg/L	X		One (1) time (One-off)
Manganese	mg/L	X		One (1) time (One-off)

END OF THE SECTION

APPENDIX A

LIST OF ENVIRONMENTAL MITIGATION MEASURES

The list will be transmitted to the lowest compliant bidder

APPENDIX B

ENVIRONMENTAL MONITORING FORM

Services publics et Approvisionnement Canada | Public Services and Procurement Canada

ENVIRONMENTAL MONITORING FORM

PROJECT IDENTIFICATION	
Promoter:	Public Services and Procurement Canada
Project Title:	***Upgrading the wastewater treatment system at Cap Tourmente National Wildlife Area***
Date of completion of the work:	
Date of completion of monitoring:	
Monitoring activity carried out:	☐ Field visit during the work ☐ Other monitoring activity (specify): ☐ Emergency-Environment
SITE SUPERVISION PROVIDED BY:	
Name of supervisor:	
Title:	
Organization :	
Phone Number:	
I certify that the information provided above is accurate and complete and that it corresponds to my interpretation of the work.	
Signature: _____	Date : _____
Name:	

MITIGATION MEASURES		**PROVIDED**		**MEASUR-MENT CARRIED OUT**		
		Picture (s)	**Document (s)**	**Yes**	**Not**	**FEEDBACK** (If not, explain!)
Risk of habitat disturbance of plant species with precarious status and loss of individuals during work						
1	Before the work, identify, delimit, and mark species with precarious status as part of an inventory carried out in the fall by a flora specialist.					
2	Prior to the work, establish visible protection zones of at least 2 m around the identified species of precarious status, if any.					
3	Avoid species with precarious status when setting up the construction site and storage areas, if applicable.					
Introduction of invasive alien plant species using machinery						
4	The machinery used must be clean and free of invasive alien flora species upon arrival at the site and maintain it in this state thereafter.					
5	As part of an inventory carried out in summer by a flora specialist, identify, delimit, and mark the EVEE on the list of invasive alien plants.					

6	Before the work, set up visible protection zones of at least 2 m around the EVEE previously identified by the flora specialist, if necessary.					
7	When possible, avoid EVEE when setting up the site, access roads and storage areas, if applicable.					
8	If EVEE cannot be avoided, inspect, and clean any machinery that has been in contact with these species using high-pressure air or other tools such as brushes, brooms, shovels or vacuum cleaners. This operation must be carried out in a washing area that allows all solid residues to be contained.					
9	Treat separately excavated soils under identified EVEE colonies, or in the 2 m buffer strip, up to a depth of 2 m, as SOIL contaminated with EVEE.					
10	Soil contaminated with EVEE will need to be deposited in a confined area or directly in transport trucks, pending off-site transport, if applicable.					
11	Revegetation of the areas laid bare at the end of the work using a mixture of seeds of native species compatible with the nature of the soil and the surrounding environment.					
Alteration of surface water quality during excavation water management						
12	Avoid excavations during periods of heavy rain. Weather monitoring should be carried out before each excavation phase.					
13	Direct pumping water from the excavations to the pond, which already acts as a sedimentation basin.					
Disturbance or destruction of archaeological property during excavation work						
14	Temporarily interrupt work in the event of incidental discoveries of a potential archaeological property during excavations and have the discovery evaluated by a specialist in the archaeological field.					
Habitat disturbance for herpetofauna and fish						
15	Install a sediment barrier downstream of maintenance work.					
16	Vegetate the slopes and banks of the watercourse with a mixture of native seeds adapted to the riparian environment or composed of seeds of the species present at the site.					
Risk of spillage of petroleum products using machinery						
17	The contractor must ensure the use of equipment in good working order that has undergone the required maintenance, to limit the risk of accidents.					
18	The vehicles and equipment used must be in good working order and must not leak oil or fuel; the entry of vehicles with leaks will be prohibited.					
19	Machinery will have to circulate within the proposed boundaries of the right-of-way.					
20	Establish an emergency procedure and communication protocol in the event of an environmental incident.					

21	Have sufficient oil recovery kits on site and ensure that workers are trained to respond to leaks or spills.					
22	Minimum quantities of gasoline will be kept on site.					
Production of residual material and waste						
23	Any residual material produced during the work must be collected and disposed of according to their nature. The contractor must ensure that no debris is left on the site of the work.					
24	Keep the site free of waste or temporarily dispose of it in watertight containers intended for a particular purpose.					
25	Dispose of all waste in compliance with regulations.					
26	No new hazardous materials may be disposed of. At the end of the work, the contractor must take back all his unused hazardous materials to leave the site perfectly clean.					
27	The contractor must remove from the site all residual materials, hazardous residual materials, temporary installations, tools, equipment, machinery, and materials on the site to leave it perfectly clean.					
The project presents risks of environmental incidents and failures can lead to the accidental spill of hazardous products						
28	Machinery will have to circulate within the proposed boundaries of the right-of-way.					
29	Perform, under constant supervision, any handling of fuel, oil, other petroleum products or contaminants, including transfer, to avoid accidental spills and to react promptly, if necessary.					
30	Store hazardous materials following good regulatory practices.					
31	Use construction equipment and vehicles in good working order and free of leaks.					
32	Have all equipment and vehicles inspected by a qualified mechanic prior to the start of work to ensure that there is no breakage that could result in the loss of oil or any other contaminant. Repair non-conformities as soon as possible.					
33	Equip all mobile equipment with an oil recovery kit in the event of an accidental spill.					
34	Provide emergency spill kits at storage areas and ensure that protections are in place on all four sides to avoid collisions with vehicles.					
35	Place equipment (e.g. generator), cans and containers containing hydrocarbons in a tank or between berms that can collect 125% of the volume of stored reserves.					
36	Provide for the establishment and implementation of an emergency plan in the event of an accidental spill of contaminants. Properly identify the persons and authorities responsible as well as the procedure to be followed in the event of an environmental emergency. Ensure that the response plan contains, at a minimum, an intervention plan and alert structure that are known to all employees.					

37	In the event of a spill, apply the emergency plan. Notify ECC and the MELCC, use protective and restraining measures (absorbent berms) and promptly clean the area (if possible). Inform Urgence-Environnement (1 866 694-5454) of any accident that may disturb the environment.					
38	Dispose of hazardous residual materials in a site duly authorized by the MELCC. Manage contaminated soils and/or sediments, if applicable, in accordance with the Soil Protection and Contaminated Land Rehabilitation Policy and the Intervention Guide – Soil Protection and Rehabilitation of Contaminated Land (Beaulieu, 2019).					
39	In the event of a spill of oil or other hazardous material, immediately notify the contractor who will inform the project manager as soon as possible, who will trigger the planned alert network.					
40	Have sufficient oil recovery kits on site and ensure that workers are trained to respond to leaks or spills.					
41	Minimum quantities of gasoline will be kept on site.					

Feedback (field observations, poor waste management, presence of used oils, leaks on machinery, work carried out not taken into account in the environmental assessment, etc. - any details not mentioned in the mitigation measures):

Picture (nº)		Mitigation measure concerned (nº)	Picture (nº)		Mitigation measure concerned (nº)
1			16		
2			17		
3			18		
4			19		
5			20		
6			21		
7			22		
8			23		
9			24		
10			25		
11			26		
12			27		
13			28		
14			29		
15			30		