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END OF SECTION

SPECIFICATIONS

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 02 41 99 – DEMOLITION FOR MINOR WORKS

.2 Section 03 10 00 – CONCRETE FORMING AND ACCESSORIES

.3 Section 03 20 00 – CONCRETE REINFORCING

.4 Section 03 30 00 – CAST-IN-PLACE CONCRETE

.5 Section 03 30 03 – CONCRETE REPAIR

.6 Section 03 37 13 – SHOTCRETE

1.2 WORK COVERED BY CONTRACT DOCUMENTS

.1 The Work covered by this contract includes the restoration of the Lachine Canal walls on the section(s) indicated in the Tender Form.

.1 The restoration works can include, without limitation:

.1 Repairs of coping walls (Retaining wall) seats;

1.3 CONTRACT METHOD

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

1.4 WORK BY OTHERS

.1 Not used.

1.5 FUTURE WORK

.1 Not used.

1.6 WORK SEQUENCE

.1 Deadlines

.1 After holding the kick-off meeting, the restoration works must be completed according to the number of working days indicated in Tender Form.

.2 The final demobilization must be completed five (5) working days after completion of the restoration works.

.2 Scheduling

.1 Construction Facilities

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

.1 In the five (5) days following of submittal of the layout plan, the Consultant shall return to the Contractor a reviewed copy of the plan, along with any comments.

.2 Within five (5) days following the acceptance of the Construction Facilities Layout Plan, the Contractor shall have completed the installation of the construction trailers.

.2 Restoration of the Lachine Canal Walls

.1 Within five (5) days following the kick-off meeting, begin wall repair work.

.2 At the kick-off meeting, the Contractor must submit to the Consultant the Work Sequence for the wall restoration with a justification for each phase of the works.

.1 The Work Sequence for the wall restoration shall be prepared by prioritizing certain works over the completion of other works, in favour of the execution time.

.2 In the five (5) days following the submittal of the Work Sequence for the restoration works, the Consultant shall return to the Contractor a reviewed copy of the document, along with any comments.

.3 At the kick-off meeting, the Contractor must submit to the Consultant the Construction Schedule, taking into account the information contained in the Work Sequence.

.1 Prepare the Construction Schedule in accordance with the timeframes specified in this section of the specification and in the Tender Form.

.2 In the five (5) days following the submittal of the Construction Schedule, the Consultant shall return to the Contractor a reviewed copy of the schedule, along with any comments.

.4 Perform all repair works in accordance with the Work Sequence and the Construction Schedule approved by the Consultant.

.5 At the kick-off meeting, submit to the Consultant the Temporary Signage Boards for traffic management during the execution of the wall restoration works.

.1 In the five (5) days following the submittal of the Temporary Signage Boards for traffic management, the Consultant shall return to the Contractor a reviewed copy of the boards, along with any comments.

.2 Within five (5) days following the acceptance of Temporary Signage Boards, the Contractor shall have completed the installation of these boards on the site.

.6 At the kick-off meeting, submit to the Consultant the shop drawings of the Temporary Access System for the execution of the wall restoration works.

.1 In the five (5) days following the submittal of the Temporary Access System shop drawings, the Consultant shall return to the Contractor a reviewed copy of the drawings, along with any comments.

.2 Immediately after having received the acceptance of the Temporary Access System shop drawings, and once the temporary signage has been installed and approved by the Consultant, the Contractor shall implement the Temporary Access System on the site.

.7 At the kick-off meeting, submit to the Consultant the shop drawings required for the execution of the wall restoration works.

.1 In the five (5) days following the submittal of the shop drawings, the Consultant shall return to the Contractor a reviewed copy of the drawings, along with any comments.

.2 Within five (5) days following the acceptance of the shop drawings, the Contractor shall deliver the necessary materials to the site.

1.7 INSTRUCTIONS TO THE CONTRACTOR

.1 By accepting this Contract, the Contractor accepts all the responsibilities normally assigned to the Prime Contractor under the workplace health and safety regulations. Before starting the works, the Contractor must perform the following activities:

.1 Submit to the Consultant a Health and Safety Plan and a mechanical inspection certificate for each piece of machinery used on site.

.2 Ensure that workers on the site have received the training and information required to perform the work safely and that all required tools and protective equipment are available, in compliance with all standards, laws, and regulations.

.3 Comply at all times with the provisions of the occupational health and safety regulations and safety codes of the province of Quebec: "*Loi sur la santé et sécurité du travail*" (LSST) and the "*Code de sécurité pour les travaux de construction*" (CSTC).

.4 Inform your employees of their right to refuse any work that is dangerous to their health or safety.

.5 Identify and barricade the work area and control access to the site.

.6 In the case of an unforeseen incident, take all necessary measures, including stopping work, to protect the health and safety of the workers and the public, and immediately contact the Consultant.

.2 Construct Work so as to provide for continuous public usage. Maintain access to the public places as long as an alternative has not been developed when the progress of the works is an impediment to the free movement of the public.

1.8 CONTRACTOR USE OF PREMISES

.1 The work area can be used without restriction until substantial completion, except during the Canal Lachine navigation period, which takes place from mid-May to mid-October

(exact dates to be confirmed by the PCA). The contractor must be mobilized on site on October 19th at the latest.

.2 The use of the premises is restricted to the areas necessary for the execution of the work and those areas made available to the Contractor for the installation of the Construction Facilities and for the storage of the equipment and materials required for the works. The Contractor shall allow access to these areas to the PCA to allow:

.1 Maintenance of equipment;

.2 Partial Owner occupancy, if required;

.3 Work by other contractors.

.3 Coordinate use of premises under direction of the Consultant.

.4 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.

.5 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.

.6 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by the Consultant.

.7 At completion of operations, the condition of existing work must be equal to or better than that which existed before new work started.

1.9 OWNER OCCUPANCY

.1 Owner will occupy premises during entire construction period for execution of normal operations.

.2 Co-operate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.

1.10 PARTIAL OWNER OCCUPANCY

.1 Schedule and substantially complete designated portions of Work for Owner's occupancy prior to Substantial Performance of entire Work.

.2 Owner will occupy designated areas for purpose of storage of furnishings and equipment.

.3 Execute Certificate of Substantial Performance for each designated portion of Work prior to Owner occupancy. The Contractor must allow access to the premises to the Owner at all times.

.4 On occupancy, Owner will provide for occupied areas:

.1 Maintenance.

.2 Security.

.5 Execute Partial Interim Certificate of Completion for each designated portion of Work prior to Owner occupancy.

1.11 PRE-PURCHASED EQUIPMENT

.1 Not used.

1.12 OWNER FURNISHED ITEMS

.1 Not used.

1.13 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

.1 Not used.

1.14 EXISTING SERVICES

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

.2 Establish location and extent of service lines in area of work before starting Work. Notify Consultant of findings.

1.15 DOCUMENTS REQUIRED

.1 Maintain at job site, one copy each document as follows:

.1 Contract Drawings.
.2 Specifications.
.3 Addenda.
.4 Reviewed Shop Drawings.
.5 List of Outstanding Shop Drawings.
.6 Change Orders.
.7 Other Modifications to Contract.
.8 Field Test Reports.
.9 Copy of Approved Work Schedule.
.10 Health and Safety Plan and Other Safety Related Documents.
.11 Other documents as specified.

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Not used.

Part 2 Explanation of the Bid Form prices

2.1 Item 1. – Consultant Site Office, Environment, and General Items

.1 Item 1.1 – Construction Facilities

.1 The line item 1.1 of the Bid Form is a fixed lump sum amount to compensate all necessary expenses incurred in the execution of the works as well as any other expenses not included in the other Bid Form items, in accordance with the requirements of the specifications.

.2 The amount includes, but is not limited to, the following:

.1 All that is described in Section 01 52 00, CONSTRUCTION FACILITIES, such as site offices, access roads, platforms, walkways, barges, sanitation facilities, fencing, electricity, water, lighting, furniture, telephone and related services (internet, pagers, fax machine, etc.), heating and ventilation of site offices and storage facilities, scaffolding, construction and maintenance panels, in accordance with the requirements of the specifications and drawings, and as directed by the Consultant.

.2 The required coordination with the City of Montreal and other stakeholders, including obtaining all necessary permits to carry out the work.

.3 The maintenance of the worksite and of its access routes.

.4 All that is required in the following sections and is not directly attributed or related to one of the other items of the Bid Form:

Section 01 31 19	PROJECT MEETINGS
Section 01 35 29.06	HEALTH AND SAFETY REQUIREMENTS
Section 01 52 00	CONSTRUCTION FACILITIES
Section 01 74 11	CLEANING
Section 01 74 21	CONSTRUCTION/DEMOLITION WASTE MANAGEMENT AND DISPOSAL

.5 All costs associated with surveying and staking the works and all other site take-offs and measurements that are not allocated to any of the other items of the Bid Form.

.6 The costs of providing a security guard or other means of supervision for the site (if required).

.7 Rental costs of land and/or space for the storage of materials.

.8 The protection of existing public utilities on the bridges within the work site during construction. When required, this protection includes the removal and reinstallation of the street lampposts, of their underground

conduits and cables, and of their foundation pads. If the Contractor damages these installations during his work, he must replace them at his expense.

.3 A portion equal to 20 % of the total amount bid for this item will be paid with the first progress claim, provided that the work has begun.

.4 Other progress payments under this item will be paid to a percentage consistent with the general progress of work for each progress claim period.

.2 Item 1.2 – Environmental Protection Measures

.1 The line item 1.2 of the Bid Form is a fixed lump sum amount to compensate all necessary expenses incurred for measures to protect the environment in accordance with the requirements of the specifications.

.2 The amount includes, but is not limited to, the following:

.1 All that is described in Section 01 35 43, *Environmental Procedures* such as the preparation, presentation, and implementation of the environmental protection plan; the preparation, presentation, and implementation of the emergency spill plan; the preparation, presentation, and implementation of the construction facilities location plan location; the preparation, presentation, and implementation of the work zone plans; the preparation, presentation, and implementation of the air pollution prevention plan; the preparation, presentation, and implementation of the contamination prevention plan; the preparation, presentation, and implementation of the wastewater management plan; the preparation, presentation, and implementation of the plan for the designation and protection of wetlands and historical, archaeological, cultural, and biological resources; plant protection measures; temporary facilities for pollution prevention; the preparation, presentation, and implementation of a plan to protect the historical and heritage character of the site.

.3 A portion equal to 20 % of the total amount bid for this item will be paid with the first progress claim, provided that the work is begun.

.4 Other progress payments under this item will be paid to a percentage consistent with the general progress of work for each progress claim period.

.3 Item 1.3 – Clearing

.1 The line item 1.3 of the Bid Form is a unit price or per square meter (m^2) for all costs incurred for the clearing of trees and shrubs according to their dimensions, in accordance with the requirements of the specifications and drawings, and as directed by the Consultant.

.2 The amount includes, but is not limited to, the following:

.1 Preparation, presentation, and correction, if required, of the Work Plan;

.2 The mobilization of labour, tools, and equipment required to carry out the work;

.3 Supply, transport, handling, maintenance, and removal of access required for clearing works;

.4 The clearing of areas identified by the Consultant;

.5 Waste disposal requirements;

.6 Clean-up at the end of the clearing works;

.7 Any incidental expenses.

.4 Item 1.4 – Removal and Reinstallation of Bollards

.1 The line item 1.4 of the Bid Form is a unit price for the removal and reinstallation of bollards, in accordance with the requirements of the specifications and drawings, and as directed by the Consultant.

.2 The amount includes, but is not limited to, the following:

.1 The mobilization of labor, tools, and equipment required to carry out the work;

.2 Transportation, handling, storage, installation (including new anchors as required);

.3 Any incidental expenses.

2.2 Item 2. – Rehabilitation of the Coping Walls seats

.1 Items 2.1 – Concrete Demolition / Surface Cleaning

.1 The line items 2.1 of the Bid Form is price per square meter (m^2) of concrete surface area, in accordance with the requirements of the specifications and drawings, and as directed by the Consultant.

.2 The amount includes, but is not limited to, the following:

.1 Preparation, presentation, and correction, if required, of the Work Plan regarding the demolition of the wall;

.2 The mobilization of labour, tools, and equipment required to carry out the work;

.3 All required saw cuts;

.4 The demolition of defective and sound concrete as directed by the Consultant;

.5 The cleaning of steel reinforcement to be conserved by sandblasting;

.6 The cleaning of concrete substrate by sandblasting;

.7 The collection and treatment of materials arising from the cleaning process as prescribed by Section 01 74 21 *Construction / Demolition Waste Management and Disposal*;

.8 The collection and treatment of demolition materials as prescribed by Section 01 74 21 *Construction / Demolition Waste Management and Disposal*;

.9 Any incidental expenses.

.2 Items 2.2 – Reinforcing Steel

.1 Line items 2.2 of the Bid Form are prices or per kilogram (kg) of reinforcing steel, or square meter of wire mesh, in accordance with the requirements of the specifications and drawings and as directed by the Consultant.

.2 The amount includes, but is not limited to, the following:

.1 The preparation, presentation, and correction, if required, of the Work Plan for the installation of reinforcing steel;

.2 The mobilization of labour, tools, and equipment required to carry out the work;

.3 The preparation, presentation, and correction, if required, of the reinforcement shop drawings and bill of materials;

.4 The supply and shaping of reinforcing steel;

.5 Installation of required steel reinforcement;

.6 Any incidental expenses.

.3 Items 2.3 – Chemical Anchors

.1 Line items 2.3 of the Bid Form are unit prices per chemical anchor, in accordance with the requirements of the specifications and drawings and as directed by the Consultant.

.2 The amount includes, but is not limited to, the following:

.1 The preparation, presentation, and correction, if required, of the chemical anchor shop drawings and technical data sheets;

.2 The mobilization of labour, tools, and equipment required to carry out the work;

.3 The provision, shaping, handling, transportation, and installation of reinforcement;

.4 Drilling and cleaning holes for the installation of chemical anchors;

.5 Supply, handling, transportation, and installation of chemical anchors;

.6 The provision, shaping, handling, transportation, and installation of steel anchor rods;

.7 The treatment of surplus materials in accordance with the requirements of Section 01 74 21 *Construction / Demolition Waste Management and Disposal*;

.8 Any incidental expenses.

.4 Item – Wall Concrete (optional and must be previously approved)

.1 The line price id per cubic meter (m^3) of wall concrete, in accordance with the requirements of the specifications and drawings and as directed by the Consultant.

.2 The amount includes, but is not limited to, the following:

.1 The supply, installation, and dismantling of required formwork;

.2 Supply and installation of formwork ties;

.3 Supply and application of repair mortar at formwork tie locations;

.4 Substrate treatment before pouring;

.5 Supply and installation of steel tie wires;

.6 Supply, transportation, handling, and installation of steel elements embedded in concrete, as shown in the drawings;

.7 Supply, installation, vibration, finishing, and wet curing of concrete;

.8 Cleaning concrete surfaces adjacent to the pouring area;

.9 Following the completion of the works, off-site disposal of the formwork materials and all materials used during the correction of faulty repairs;

.10 Treatment of surplus materials in accordance with the requirements of Section 01 74 21 *Construction / Demolition Waste Management and Disposal*;

.11 Any incidental expenses.

.5 Items 2.4 – Shotcrete

.1 Line items 2.4 of the Bid Form, is price per square meter (m²) of wall concrete, in accordance with the requirements of the specifications and drawings, and as directed by the Consultant.

.2 The amount includes, but is not limited to, the following:

.1 The supply, installation, and dismantling of required formwork;

.2 Supply and installation of formwork ties;

.3 Supply and application of repair mortar at formwork tie locations;

.4 Substrate treatment before pouring;

.5 Supply and installation of steel tie wires

.6 Supply, transportation, handling, and installation of steel elements embedded in concrete, as shown in the drawings;

.7 Supply, installation, vibration, finishing, and wet curing of concrete;

.8 Cleaning concrete surfaces adjacent to the pouring area;

.9 Following the completion of the works, off-site disposal of the formwork materials and all materials used during the correction of faulty repairs;

.10 Treatment of surplus materials in accordance with the requirements of Section 01 74 21 *Construction / Demolition Waste Management and Disposal*;

.11 Any incidental expenses.

2.3 Item 3 – Provision for Winter Conditions – Cold Weather Concreting

.1 Item 3.1 – Temporary Shelter for Concrete Pouring

.1 The line item 3.1 of the Bid Form is a price per square meter (m²) of shelter surface based on the concrete surface to be protected, in accordance with the requirements of the specifications and drawings and as directed by the Consultant.

.2 The amount includes, but is not limited to, the following:

.1 Preparation, presentation, and correction, if required, to the description of the shelter.

.2 The mobilization of labour, tools, and equipment required to carry out the work;

.3 Supply, handling, and transport of materials needed to build the shelter;

.4 Installation, maintenance during construction, and dismantling of the temporary shelter upon completion of the work;

.5 Transport off-site of the materials;

.6 Any incidental expenses.

.3 The temporary shelter is payable only if it is required, in writing, by the Consultant.

.4 The bid price is paid as follows:

.1 60% of the amount after the installation of the shelter to the satisfaction of the Consultant;

.2 40% of the amount after the off-site disposal of the shelter's materials.

.2 Item 3.1 – Heating of Concrete Components or Masonry Mortar

.1 The line item 3.1 of the Bid Form is a price per cubic meter (m^3) of placed concrete or cementitious grout whose components are heated, in accordance with the requirements of the specifications and as directed by the Consultant.

.2 The amount includes, but is not limited to, the following:

.1 Heating the mixing water (between 40 and 80 °C) used for making the concrete;

.2 Heating the aggregates to remove frozen pieces, snow, and ice;

.3 Any incidental expenses.

.3 Costs for heating of concrete or non-shrink grout components required following the correction of defective work shall be borne by the Contractor.

Part 3 Products

3.1 NOT USED

.1 Not Used.

Part 4 Execution

4.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 PRICES AND PAYMENT

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

1.2 ADMINISTRATIVE

.1 Plan to hold project meetings every two (2) weeks throughout the duration of the works.

.2 Prepare agenda for meetings.

.3 Distribute a written notice of each meeting four (4) days in advance of the meeting date to the Contractor, the Parks Canada Agency (PCA) project manager, the Consultant, and the Design Engineer (when required).

.4 Provide physical space and make arrangements for meetings.

.5 Preside at meetings.

.6 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.

.7 Reproduce and distribute copies of minutes within five days after meetings and transmit to meeting participants and affected parties not in attendance.

.8 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.3 PRECONSTRUCTION MEETING

.1 Within 15 days after award of Contract, request a meeting of parties in Contract to discuss and resolve administrative procedures and responsibilities.

.2 The PCA project manager, the Consultant, the Design Engineer, as well as the Contractor and the main Subcontractors will be in attendance.

.3 Establish time and location of meeting and notify parties concerned minimum 5 days before meeting.

.4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.

.5 Agenda to include:

- .1 Appointment of official representative of participants in the Work.
- .2 Schedule of Work
- .3 Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities.
- .5 Delivery schedule of specified equipment, for each bridge.

.6 Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

.7 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.

.8 Owner provided products.

.9 Record drawings in accordance with Section 01 33 00 - Submittal Procedures.

.10 Take-over procedures, acceptance and warranties.

.11 Monthly progress claims, administrative procedures, photographs, hold backs.

.12 Appointment of inspection and testing agencies or firms.

.13 Insurances, transcript of policies.

1.4 PROGRESS MEETINGS

.1 The Consultant shall establish a schedule of the progress meetings to be held every two (2) weeks during the course of the Work, until its completion.

.2 Contractor, major Subcontractors involved in Work, the PCA project manager, and the Consultant are to be in attendance.

.3 Notify parties a minimum of five (5) days prior to meetings.

.4 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within 3 days after meeting.

.5 Agenda to include the following:

.1 Review, approval of minutes of previous meeting.

.2 Review of Work progress since previous meeting.

.3 Field observations, problems, conflicts.

.4 Health and safety.

.5 Problems which impede construction schedule.

.6 Review of off-site fabrication delivery schedules.

.7 Corrective measures and procedures to regain projected schedule.

.8 Revision to construction schedule.

.9 Progress schedule, during succeeding work period.

.10 Review submittal schedules: expedite as required.

.11 Maintenance of quality standards.

.12 Review proposed changes for effect on construction schedule and on completion date.

.13 Other business.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 DEFINITIONS

.1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.

.2 Bar Chart (GANTT Chart) : graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.

.3 Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.

.4 Construction Work Week: Monday to Friday, inclusive, will provide five day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.

.5 Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.

.6 Master Plan: summary-level schedule that identifies major activities and key milestones.

.7 Milestone: significant event in project, usually completion of major deliverable.

.8 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.

.9 Project Planning, Monitoring and Control System: overall system operated by the Consultant to enable monitoring of project work in relation to established milestones.

1.2 REQUIREMENTS

.1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.

.2 Plan to complete Work in accordance with prescribed milestones and time frame.

.3 Limit activity durations to maximum of approximately 10 working days, to allow for progress reporting.

.4 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Submit to the Consultant within seven (7) working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.

.3 Submit Project Schedule to the Consultant within five (5) working days of receipt of acceptance of Master Plan.

1.4 PROJECT MILESTONES

.1 Project milestones form interim targets for Project Schedule.

.1 Replacement of the coping walls;
.2 Restoration of the coping walls;
.3 Repairs to the cracks in the concrete and/or concrete foundation repairs;
.4 Restoration of eroded or cracked stones and of hollowed joints;
.5 Repairs to damaged wooden structures;
.6 Correction of unstable backfill;
.7 Restoration of the concrete walls that overflow into the Canal.

1.5 MASTER PLAN

.1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).

.2 The Consultant will review and return revised schedules within 5 working days.

.3 Revise impractical schedule and resubmit within 5 working days.

.4 Accepted revised schedule will become Master Plan and be used as baseline for updates.

1.6 PROJECT SCHEDULE

.1 Develop detailed Project Schedule derived from Master Plan.

.2 Ensure detailed Project Schedule includes, as minimum, milestone and activity types as follows:

.1 Award;
.2 Shop Drawings, Samples;
.3 Permits;
.4 Mobilization;
.5 Replacement of the coping walls (if applicable);
.6 Restoration of the coping walls (if applicable);
.7 Repairs to the cracks in the concrete and/or concrete foundation repairs (if applicable);
.8 Restoration of eroded or cracked stones and of hollowed joints (if applicable);
.9 Repairs to damaged wooden structures (if applicable);
.10 Correction of unstable backfill (if applicable);
.11 Restoration of the concrete walls that overflow into the Canal (if applicable), etc.

1.7 PROJECT SCHEDULE REPORTING

.1 Update Project Schedule on weekly basis reflecting activity changes and completions, as well as activities in progress.

.2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

1.8 PROJECT MEETINGS

.1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.

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

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 02 41 99 – DEMOLITION FOR MINOR WORKS

.2 Section 03 10 00 – CONCRETE FORMING AND ACCESSORIES

.3 Section 03 20 00 – CONCRETE REINFORCING

.4 Section 03 30 00 – CAST-IN-PLACE CONCRETE

.5 Section 03 30 03 – CONCRETE REPAIR

.6 Section 03 37 13 – SHOTCRETE

1.2 REFERENCES

.1 Not used.

1.3 ADMINISTRATIVE

.1 A maximum of two (2) weeks after the award of the Contract by Parks Canada, the Contractor must provide a list of subcontractors and proof of contracts with each of them.

.2 If the evidence of contracts with the subcontractors are not provided within the required time, penalties will be applied.

.3 Promptly and according to a predetermined sequence such that the execution of works is not delayed, submit the required documents and samples to the Consultant for inspection. A delay in this respect is not a sufficient reason to obtain an extension to the completion schedule of the Works and therefore no such request will be accepted.

.4 Do not undertake work for which the submittal of documents and samples are required until the inspection of all documents submitted has been completely finished.

.5 Present shop drawings, product data, samples and mock-ups in SI Metric units.

.6 Where items or information is not produced in SI Metric units converted values are acceptable.

.7 Review submittals prior to submission to the Consultant. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.

.8 Notify the Consultant in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.9 Verify field measurements and affected adjacent Work are co-ordinated.

.10 Contractor’s responsibility for errors and omissions in submission is not relieved by the Consultant’s review of submittals.

.11 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by the Consultant’s review.

.12 Keep one reviewed copy of each submission on site.

1.4 SHOP DRAWINGS AND PRODUCT DATA

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

.2 The shop drawings must bear the seal and signature of a qualified and authorized engineer, member in good standing of the *Ordre des ingénieurs du Québec*.

.3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

.4 Allow seven (7) days for the Consultant to review each submission.

.5 Adjustments made on shop drawings by the Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to the Consultant prior to proceeding with Work.

.6 Make changes in shop drawings as the Consultant may require, consistent with Contract Documents. When resubmitting, notify the Consultant in writing of revisions other than those requested.

.7 Accompany submissions with transmittal letter, in duplicate, containing:

- .1 Date.
- .2 Project title and number.
- .3 Contractor's name and address.
- .4 Identification and quantity of each shop drawing, product data and sample.
- .5 Other pertinent data.

.8 Submissions include:

- .1 Date and revision dates.
- .2 Project title and number.
- .3 Name and address of:
  - .1 Subcontractor.
  - .2 Supplier.
  - .3 Manufacturer.
- .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
- .5 Details of appropriate portions of Work as applicable:
  - .1 Fabrication.
  - .2 Layout, showing dimensions, including identified field dimensions, and clearances.

.3 Setting or erection details.
.4 Capacities.
.5 Performance characteristics.
.6 Standards.
.7 Operating weight.
.8 Wiring diagrams.
.9 Single line and schematic diagrams.
.10 Relationship to adjacent work.

.9 After the Consultant's review, distribute copies.

.10 Submit two (2) printed copies and one (1) electronic copy of all shop drawings prescribed in the specification sections and according to the requirements of the Consultant.

.11 If a shop drawing is not required due to the use of a standard manufacturing product, submit two (2) printed copies and one (1) electronic copy of the technical data sheet or the manufacturer's documentation prescribed in the specification sections and as required by the Consultant.

.12 Submit two (2) printed copies and one (1) electronic copy of the test reports prescribed in the specification sections and as required by the Consultant.

.1 The report signed by the official representative of the testing laboratory must certify that materials, products, and systems identical to those proposed in the Work have been tested in accordance with prescribed requirements.

.2 The tests must have been carried out within five (5) years preceding the date of contract award.

.13 Submit two (2) printed copies and one (1) electronic copy of the certificates prescribed in the specification sections and as required by the Consultant.

.1 Documents must be printed on official correspondence paper of the manufacturer, signed by a representative of the latter, and must certify that the products, materials, equipment, and systems provided meet the requirements of the specifications.

.2 Certificates must bear a date subsequent to the award of the Contract and indicate the name of the project.

.14 Submit two (2) printed copies and one (1) electronic copy of the manufacturer's instructions as prescribed in the specification sections and as required by the Consultant.

.1 Documents must be pre-printed, describing the method of installation of the products, equipment, materials, and systems, including special notices and material safety data sheets indicating any impedances and hazards, as well as safety measures to be implemented.

.15 Submit two (2) printed copies and one (1) electronic copy of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by the Consultant.

.16 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.

.17 Submit two (2) printed copies and one (1) electronic copy of Operation and Maintenance Data for requirements requested in specification Sections and as requested by the Consultant.

.18 Delete information not applicable to project.

.19 Supplement standard information to provide details applicable to project.

.20 If upon review by the Consultant, no errors or omissions are discovered or if only minor corrections are made, one (1) printed copy will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

.21 The review of shop drawings by Parks Canada Agency (PCA) is for sole purpose of ascertaining conformance with general concept.

.1 This review shall not mean that PCA approves detailed design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.

.2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

1.5 SAMPLES

.1 Submit for review samples in triplicate as requested in respective specification Sections. Label samples with origin and intended use.

.2 Deliver samples prepaid to the Consultant’s site office.

.3 Notify the Consultant in writing, at time of submission, of deviations in samples from requirements of Contract Documents.

.4 Where colour, pattern or texture is criterion, submit full range of samples.

.5 Adjustments made on are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to prior to proceeding with Work.

.6 Make changes in samples which may require, consistent with Contract Documents.

.7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.6 MOCK-UPS

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

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 02 41 99 – DEMOLITION FOR MINOR WORKS

1.2 REFERENCES

.1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations

.2 Health Canada, Workplace Hazardous Materials Information System (WHMIS)

.3 Province of Quebec

.1 *Loi sur la santé et la sécurité du travail*, L.R.Q., c. S-2.1- updated 2014.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:

.1 Results of site specific safety hazard assessment.

.2 Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.

.3 Submit 2 copies of Contractor's authorized representative's work site health and safety inspection reports to authority having jurisdiction, weekly, as well as to the Consultant.

.4 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.

.5 Submit copies of incident and accident reports.

.6 Submit the WHMIS material safety data sheets (MSDS).

.7 The Consultant will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 7 days after receipt of plan. Revise plan as appropriate and resubmit plan to Consultant within 5 days after receipt of comments from the Consultant.

.8 The Consultant’s review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.

.9 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to the Consultant.

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

1.4 FILING OF NOTICE

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

1.5 SAFETY ASSESSMENT

.1 Conduct an assessment of the risks and safety hazards present on the site in relation to the works to be performed.

.2 It is the responsibility of the Contractor to conduct audits to ensure the safety of the work done near the Lachine Canal Walls. These checks are needed to avoid the risks of instability or collapse of the walls.

1.6 MEETINGS

.1 Schedule and administer Health and Safety meetings with the Consultant prior to commencement of Work.

.2 Notify the Consultant at least five (5) days before this meeting.

1.7 REGULATORY REQUIREMENTS

.1 Perform the Works in accordance with the requirements of the authorities have jurisdiction in the City of Montreal territory.

1.8 GENERAL REQUIREMENTS

.1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.

.2 The Consultant may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.9 RESPONSIBILITY

.1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.

.2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.10 COMPLIANCE REQUIREMENTS

.1 Comply with the health and safety regulations, *Loi sur la santé et la sécurité du travail, Règlement sur les établissements industriels et commerciaux*, R.R.Q.

.2 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

1.11 UNFORSEEN HAZARDS

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

1.12 HEALTH AND SAFETY CO-ORDINATOR

.1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:

.1 Possess practical construction site experience involving activities associated with concrete repair, electrical works, and paving works.

.2 Have working knowledge of occupational safety and health regulations.

.3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.

.4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.

.5 Be on site during execution of Work and report directly to and the Consultant following his instructions.

1.13 POSTING OF DOCUMENTS

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

1.14 CORRECTION OF NON-COMPLIANCE

.1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by the Consultant.

.2 Provide Consultant with written report of action taken to correct non-compliance of health and safety issues identified.

.3 Consultant may stop Work if non-compliance of health and safety regulations is not corrected.

1.15 BLASTING

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

1.16 POWDER ACTUATED DEVICES

.1 Use powder actuated devices only after receipt of written permission from the Consultant.

1.17 WORK STOPPAGE

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

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 PROJECT PROCEDURES FOR CONTAMINATED SITES

.2 Section 01 74 21 – CONSTRUCTION/DEMOLITION WASTE MANAGEMENT AND DISPOSAL

.3 Section 02 41 99 – DEMOLITION FOR MINOR WORKS

1.2 REFERENCES

.1 Definitions:

.1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humans; or degrade environment aesthetically, culturally and/or historically.

.2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction. Prevention of pollution and damages to the environment covers the protection of soil, water, air, biological and cultural resources; it also includes management of visual aesthetics, noise, solid, chemical, gaseous, and liquid wastes, radiant energy, radioactive materials, and other pollutants.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature, and data sheets that include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit 2 copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.

.3 Before commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review and approval by the Consultant. The Environmental Protection Plan must include comprehensive overview of known or potential environmental issues to be addressed during construction.

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

.5 The actions included in the Environmental Protection Plan shall be presented with a level of detail that is consistent with the environmental concerns and the construction works to be performed.

.6 Include in Environmental Protection Plan :

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

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

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

.4 Descriptions of environmental protection personnel training program.

.5 Drawings showing the location of temporary excavations or site trails landscaped with backfill, the crossing of rivers, materials, construction, sanitation facilities, deposits of surplus materials or contaminated materials; drawings showing the methods to be used to control runoff and to contain materials on the site.

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

.1 Plans to include measures to minimize amount of material transported onto paved public roads by vehicles or runoff.

.7 Spill Control Plan to include procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.

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

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

.10 Contaminant Prevention Plan identifying potentially hazardous substances to be used on job site; intended actions to prevent introduction of such materials into air, water, or ground; and detailing provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.

.11 Waste Water Management Plan identifying methods and procedures for management discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines.

.12 Historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands.

.13 Pesticide treatment plan to be included and updated, as required.

.14 A plan to prevent erosion and sediment transport, indicating the measures to be implemented, including the production of reports to verify compliance with federal, provincial, and municipal laws and regulations;

.15 A plan of the work area, showing the activities in every part of the work area and indicating areas of restricted and prohibited use; the plan must include measures for marking the limits of the useable areas and methods of protection of the elements found within the work areas that must be preserved;

.7 Mitigation and/or compensation measures described in Appendix must be implemented to the satisfaction of the Consultant.

1.4 FIRES

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

1.5 DRAINAGE

.1 Develop and submit erosion and Sediment Control Plan (ESC) identifying type and location of erosion and sediment controls provided. Plan to include monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations.

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

.3 Ensure pumped water into waterways, sewer or drainage systems is free of suspended materials.

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

1.6 SITE CLEARING AND PLANT PROTECTION

.1 Protect trees and plants on site and adjacent properties as indicated.

.2 Protect trees and shrubs adjacent to construction work, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of 2 m minimum.

.3 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage. Avoid driving and uselessly unloading or storing materials over the root zone of the protected trees.

.4 Minimize stripping of topsoil and vegetation.

.5 Restrict tree removal to areas indicated unless having received a written authorization from the Parks Canada Agency manager before beginning the work.

1.7 POLLUTION CONTROL

.1 Maintain temporary erosion and pollution control features installed under this Contract.

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

.3 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area.

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

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

1.8 HISTORICAL/ARCHAEOLOGICAL CONTROL

.1 Provide historical, archaeological, cultural resources, biological resources, and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands known to be on project site: and identifies procedures to be followed if historical archaeological, cultural resources,

biological resources and wetlands not previously known to be onsite or in area are discovered during construction.

.2 Plan: include methods to assure protection of known or discovered resources and identify lines of communication between Contractor personnel and the Consultant.

1.9 NOTIFICATION

.1 The Consultant will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan.

.2 Contractor: after receipt of such notice, inform the Consultant of proposed corrective action and take such action for approval by the Consultant.

.1 Take action only after receipt of written approval by the Consultant.

.3 The Consultant will issue stop order of work until satisfactory corrective action has been taken.

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

Part 2 Products

2.1 MATERIAL

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

Part 3 Execution

3.1 CLEANING

.1 Progress Cleaning : clean in accordance with Section 01 74 11 - Cleaning.

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

.2 Ensure that streams and storm and public sanitary sewers remain free of waste and flushed volatile materials.

.3 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.

.4 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

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

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

END OF SECTION

Tableau 1 Mesures d'atténuation et importance des effets résiduels – CLAC-PIF-894-1504-RMUR

Composantes ou activités du projet	Composantes de l'environnement	Description des effets environnementaux	Mesures d'atténuation des impacts	Importance des effets résiduels
1. Utilisation et circulation de la machinerie/ Transport de matériaux et d'équipements/ Entreposage Mise en chantier/ démobilisation	Qualité de l'air et santé publique	• Diminution de la qualité de l'air ambiant par émission de particules (poussières) • Émission de CO_2 de la machinerie	1.1 S'assurer que les systèmes d'échappement et antipollution de la machinerie/matériel de construction soient maintenus en bon état. 1.2 Éviter de laisser tourner inutilement les moteurs lorsque les véhicules sont à l'arrêt. 1.3 Se conformer à la règlementation municipale en vigueur en ce qui a trait aux émissions de poussières dans l'air. 1.4 S'assurer que les matériaux fins utilisés pour la construction de même que les résidus soient confinés durant leur transport. 1.5 Au besoin, recouvrir d'une toile les matériaux fins entreposés, dont les particules risquent d'être entrainées par le vent. 1.6 Éviter la manipulation et le transport de matériaux pouvant facilement s'éroder dans des conditions de grands vents ou lorsqu'un panache de poussière est visible.	Impact résiduel négligeable et localisé
	Niveau sonore	• Augmentation du niveau de bruit ambiant	1.7 Respecter la règlementation municipale en vigueur en matière de bruit et d'horaire de travail 1.8 Gérer le chantier de façon à minimiser les travaux qui engendrent des activités sonores importantes.	Nul une fois les travaux terminés
	Qualité de l'eau et du sol/sédiment	• Compaction du sol dans la zone de mobilisation (si applicable) • Risque de déversement d'hydrocarbure ou autres substances néfastes dans le sol/ sédiments ou dans l'eau	1.9 Maintenir en bon état et entretenir régulièrement la machinerie et le matériel de construction durant toute la durée des travaux. Réparer immédiatement ou enlever du chantier les véhicules ou équipement qui ont des fuites. 1.10 Entreposer, manipuler et utiliser les produits pétroliers avec précaution et prévoir du matériel de confinement et de récupération (ex. absorbants) en cas de fuites ou de déversement. 1.11 Prévoir une procédure d'urgence et un protocole de communication en cas d'incident environnemental. 1.12 Aviser Parcs Canada, Urgence Environnement et toute autre autorité compétente en matière d'urgence environnementales 1.13 Ne pas entreposer les carburants, huiles, lubrifiants et autres produits pétrochimiques à moins de 30 mètres du plan d'eau et les installer sur des toiles imperméables 1.14 Éviter de ravitailler la machinerie à moins de 30 mètres du plan d'eau 1.15 Mettre en œuvre des mesures de contrôle des sédiments et de l'érosion si le sol est perturbé ou exposé 1.16 Éviter les mouvements de véhicules en période de grande pluie où les sols deviennent saturés d'eau 1.17 Au besoin, recouvrir rapidement la terre végétale de tourbe ou d'une toile en cas de pluie 1.18 La machinerie ne devra en aucun temps circuler sur le lit du canal	Impact résiduel négligeable et localisé
	Végétation	• Dommages causés à la végétation, surface gazonnée dans le secteur • Système de racines, branches et écorces endommagés suite au mouvement de la machinerie	1.19 Préconiser la mobilisation/circulation des véhicules sur des surfaces durables (ex. pavées) 1.20 Limiter le chantier et zone d'entreposage aux surfaces durables 1.21 Établir et délimiter une aire de protection autour des arbres et arbustes à préserver (ex. rubans, barrières, etc.) afin de ne pas les endommager ou affecter le réseau racinaire. 1.22 Réhabiliter les surfaces de terrain et la végétation endommagées par les travaux afin que le site soit laissé comme il était préalablement aux travaux 1.23 Les surfaces réhabilitées devraient avoir un degré de compaction et une aération correspondants à l'état initial (avant travaux) afin de prévenir le transport et la circulation des particules de sols 1.24 Si nécessaire, les arbres et arbustes à abattre seront remplacés lors de la phase de réhabilitation à la fin des travaux 1.25 Répondre à toute autre exigence du chargé de projet et du responsable de chantier	Impact résiduel négligeable et localisé
2. Démolition de béton (sciage, concassage, etc.)	Qualité de l'air et santé publique	• Diminution de la qualité de l'air ambiant par émission de particules (poussières)	2.1 Même que 1.3 à 1.5 2.2 Employer des méthodes de travail qui génèrent le moins de poussière possible 2.3 Respecter la règlementation en place lors de travaux de démolition	Impact résiduel négligeable et localisé
	Niveau sonore	• Augmentation du niveau de bruit	2.4 Même que 1.7 et 1.8	Nul une fois les travaux

Composantes ou activités du projet	Composantes de l'environnement	Description des effets environnementaux	Mesures d'atténuation des impacts	Importance des effets résiduels
		ambiant		terminés
Enlèvement, entreposage et disposition débris des murs	Qualité de l'eau et du sol/sédiments	• Augmentation des matières en suspension et particules dans le canal • Des débris de béton friable ayant été en contact avec du sol contaminé peuvent être déposés sur le sol ou le lit du canal lors des travaux	2.5 Prévoir des mesures afin de confiner et récupérer les débris (ex. bâche, géotextile, barrière à sédiments lestée ou fixée parallèlement à la rive). Porter attention à limiter le déplacement des résidus dans le plan d'eau lors du retrait des installations 2.6 Nettoyer les débris au fur et à mesure et en disposer dans les sites autorisés par le MDDELCC 2.7 Ne jeter aucun débris ou résidu dans le plan d'eau 2.8 Ne prendre aucun matériau d'emprunt dans le plan d'eau	Impact résiduel négligeable et localisé
	Ressources aquatiques	• Empiètement sur habitat	2.9 Aucun empiètement ne doit être fait sur le plan d'eau pour ne pas engendrer de perte d'habitat de poisson	Impact résiduel négligeable et localisé
3. Nettoyage des surfaces (jet de sable et jet d'eau sous pression)	Qualité de l'air, des sols, de l'eau/sédiments, ressources aquatiques et santé humaine	• Apport de substances contaminées dans l'environnement. • Émission de poussières dans l'air et de particules contenant de la silice • Intoxication chez le travailleur exposé aux particules de silice	3.1 Même que 1.3 3.2 Mettre en place des mesures de confinement et de récupération adéquates pour minimiser l'apport de contaminants dans l'air et les sols, par exemple : - Installer un abri et une bâche de récupération pour retenir les particules de sablage au jet et les résidus de béton générés par les travaux de nettoyage. L'abri devra offrir une imperméabilité pour éviter un lessivage en cas de pluie et un mécanisme de captage au sol pour éviter le rejet dans le canal. 3.3 Traiter les résidus de sablage en tant que matières dangereuses résiduelles (MDR), tel que stipulé dans le Règlement sur les matières dangereuses. Mettre en place les mesures adéquates pour : - Récupérer la totalité des résidus de sablage - Entreposer les résidus de façon hermétique - Disposer des résidus dans les sites autorisés par le MDDELCC 3.4 Respecter les teneurs admissibles précisées dans la réglementation en vigueur pour la silice dans l'abrasif 3.5 Dans la mesure du possible, utiliser un abrasif présentant des impacts moins importants que la silice 3.6 Utiliser les vêtements de protection requis (masque, gants, etc.) selon les valeurs d'exposition 3.7 Procéder dans les périodes où l'activité naturelle est moins importante (reproduction, alimentation etc.)	Impact résiduel négligeable et localisé
4. Réparation des murs (coulage de béton et/ou béton projeté)	Qualité de l'eau et du sol/sédiment et ressources aquatiques	• Apport de matériau • Contamination et perte d'habitat • Produits utilisés peuvent altérer les composantes naturelles locales du milieu aquatique	4.1 Même que 2.5 à 2.8 4.2 Utiliser des produits qui présentent le moins d'effets néfastes pour l'environnement et s'assurer de leur conformité environnementale	Impact résiduel négligeable et localisé
5. Élimination des déchets (matériaux de construction/ démolition, eaux de nettoyage, etc.)	Qualité de l'air, des sols, de l'eau/sédiments, ressources aquatiques et santé humaine	• Apport de débris de construction et démolition • Apports de contaminants par des résidus de nettoyage • Dégradation de la qualité des sols	5.1 S'assurer que les eaux usées générées lors des travaux soient confinées et récupérées. Si un système de traitement (bassin de sédimentation portatif, filtres ou autres installations de ce genre) doit être utilisé, celui-ci doit empêcher les contaminants et les particules susceptibles de se déposer dans les réseaux de ruisseler vers les égouts. Utiliser les moyens nécessaires pour définir le mode d'élimination des sédiments captés, des eaux résiduaires, et pour s'assurer de respecter les normes de rejet applicables. 5.2 Éliminer hors du chantier toutes les matières résiduelles non dangereuses et fournir suffisamment de conteneurs pour entreposer les déchets domestiques sur une base journalière. 5.3 Mettre en place un programme adéquat de gestion pour assurer le confinement et l'élimination des rebuts tels que les débris métalliques, le revêtement bitumineux usagé et les débris de béton. Ces rebuts doivent être autant que possible isolés à la source et recyclés. 5.4 Ne pas entreposer de matières résiduelles dangereuses sur le chantier et les éliminer hors du chantier en conformité avec la règlementation applicable.	Impact résiduel négligeable et localisé

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 02 41 99 – DEMOLITION FOR MINOR WORKS

.2 Section 03 10 00 – CONCRETE FORMING AND ACCESSORIES

.3 Section 03 20 00 – CONCRETE REINFORCING

.4 Section 03 30 00 – CAST-IN-PLACE CONCRETE

.5 Section 03 30 03 – CONCRETE REPAIR

.6 Section 03 37 13 – SHOTCRETE

1.2 Section 32 91 19.13 – TOPSOIL PLACEMENT AND GRADINGREFERENCES

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-94, Stipulated Price Contract.

1.3 INSPECTION

.1 Allow the Consultant access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.

.2 Give timely notice requesting inspection if Work is designated for special tests, inspections, or approvals by the Consultant instructions, or law of Place of Work.

.3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.

.4 The Consultant will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, the Consultant shall pay cost of examination and replacement.

1.4 INDEPENDENT INSPECTION AGENCIES

.1 The Parks Canada Agency (PCA) will be responsible for engaging the services of independent testing and inspection bodies (lab). The cost of these services will be borne by the APC. This does not absolve the Contractor to carry out tests to meet contractual requirements.

.2 Provide equipment required for executing inspection and testing by appointed agencies.

.3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.

.4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by the Consultant at no cost to the Consultant. Pay costs for retesting and reinspection.

1.5 ACCESS TO WORK

.1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.

.2 Co-operate to provide reasonable facilities for such access.

1.6 PROCEDURES

.1 Notify appropriate agency and the Consultant in advance of requirement for tests, in order that attendance arrangements can be made.

.2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.

.3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.7 REJECTED WORK

.1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by the Consultant as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.

.2 Make good other Contractor's work damaged by such removals or replacements promptly.

.3 If in opinion of the Consultant it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by the Consultant.

1.8 REPORTS

.1 Submit [4] copies of inspection and test reports to the Consultant.

.2 Provide copies to subcontractor of work being inspected or tested.

1.9 TESTS AND MIX DESIGNS

.1 Furnish test results and mix designs as requested.

.2 Cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised by the Consultant and may be authorized as recoverable.

1.10 MILL TESTS

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

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Not used.

1.2 REFERENCES

.1 Canadian General Standards Board (CGSB)

.1 CAN/CGSB 1.189-00, Exterior Alkyd Primer for Wood or equivalent approved by the Consultant.

.2 CGSB 1.59-97, Alkyd Exterior Gloss Enamel or equivalent approved by the Consultant.

.2 Canadian Standards Association (CSA International)

.1 CSA-A23.1/A23.2, latest edition, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.

.2 CSA-0121, latest edition, Douglas Fir Plywood.

.3 CAN/CSA-S269.2, latest edition, Access Scaffolding for Construction Purposes.

.4 CAN/CSA-Z321, latest edition, Signs and Symbols for the Occupational Environment.

.3 U.S. Environmental Protection Agency (EPA) / Office of Water

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

.4 U.S. Environmental Protection Agency (EPA) / Office Water

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

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

1.4 INSTALLATION AND REMOVAL

.1 The Parks Canada Agency has made land available to the Contractor for the installation of construction site facilities (the Contractor's site office, the Consultant’s site office, and storage areas). The following documents are provided as appendix in this section for references.

- Property limits of APC
- Access and mobilization zone available
- Typical photos of existing conditions
- Table of mitigations measures
- CLAC-Relevé Bief 4-Mur SUD (Rive-Droite)-2009 OPT

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

.3 Identify areas that must be covered with gravel to prevent mud accumulation.

.4 Indicate any additional areas or staging areas.

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

.6 Remove from site all such work after use.

1.5 SCAFFOLDING

.1 Scaffolding in accordance with CAN/CSA-S269.2.

.2 Provide and maintain scaffolding, ramps, ladders, swing staging, platforms and temporary stairs and ensure proper maintenance throughout the duration of the Works.

1.6 HOISTING

.1 Provide, operate and maintain hoists cranes required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for their use of hoists.

.2 Hoists cranes to be operated by qualified operator.

1.7 SITE STORAGE/LOADING

.1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.

.2 Do not load or permit to load any part of Work with weight or force that will endanger Work.

1.8 CONSTRUCTION PARKING

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

.2 Provide and maintain adequate access to project site.

.3 Clean runways and taxi areas where used by Contractor's equipment.

1.9 SECURITY

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

1.10 OFFICES

.1 Provide office heated to 22 degrees C, lighted 750 lx and ventilated, of sufficient size to accommodate site meetings and furnished with drawing laydown table.

.2 Provide marked and fully stocked first-aid case in a readily available location.

.3 Subcontractors to provide their own offices as necessary. Direct location of these offices.

.4 Site office of the Consultant :

.1 Provide temporary office for the Consultant.

.2 Inside dimensions minimum 3.6 m long x 3 m wide x 2.4 m high, with floor 0.3 m above grade, complete with 4-50 % opening windows and one lockable door.

.3 Insulate building and provide heating system to maintain 22 degrees C inside temperature at -20 degrees C outside temperature.

.4 Finish inside walls and ceiling with plywood, hardboard or wallboard and paint in selected colours. Finish floor with 19 mm thick plywood.

.5 Install electrical lighting system to provide min 750 lx using surface mounted, shielded commercial fixtures with 10 % upward light component.

.6 The Consultant's site office must include a high-speed internet connection, with all connection and user fees paid for by the Contractor.

.7 Provide private washroom facilities adjacent to office complete with flush or chemical type toilet, lavatory and mirror and maintain supply of paper towels and toilet tissue.

.8 Equip office with 1 x 2 m table, 4 chairs, 6 m of shelving 300 mm wide, one 3 drawer filing cabinet, one plan rack and one coat rack and shelf.

.9 Maintain in clean condition.

1.11 EQUIPMENT, TOOL AND MATERIALS STORAGE

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

.2 Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with work activities.

1.12 SANITARY FACILITIES

.1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.

.2 Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.13 CONSTRUCTION SIGNAGE

.1 Provide and erect project sign, within three weeks of signing Contract, in a location designated by the Consultant.

.2 Construction sign 1200 x 2400 m, of wood frame and plywood construction painted with exhibit lettering produced by a professional sign painter.

.3 Indicate on sign, name of Owner, Consultant, of design style established by the Consultant.

.4 No other signs or advertisements, other than warning signs, are permitted on site.

.5 Provide project identification site sign comprising foundation, framing, and one 1200 x 2400 mm signboard as detailed and as described below.

.1 Foundations: 15 MPa concrete to CSA-A23.1 minimum 200 mm x 900 mm deep.

.2 Framework and battens: SPF, pressure treated minimum 89 x 89 mm.

.3 Signboard: Medium Density Overlaid Douglas Fir Plywood to CSA O121.

.4 Paint: alkyd enamel to CAN/CGSB-1.59 over exterior alkyd primer to CAN/CGSB 1.189.

.5 Fasteners: hot-dip galvanized steel nails and carriage bolts.

.6 Vinyl sign face: printed project identification, self adhesive, vinyl film overlay, supplied by the PCA project manager.

.6 Locate project identification sign where indicated by the Consultant and construct as follows:

.1 Paint surfaces of signboard and framing with one coat primer and two coats enamel. Colour white on signboard face, black on other surfaces.

.2 Apply vinyl sign face overlay to painted signboard face in accordance with installation instruction supplied.

.7 Direct requests for approval to erect Consultant/Contractor signboard to the Consultant. For consideration general appearance of Consultant/Contractor signboard must conform to project identification site sign. Wording in both official languages.

.8 Signs and notices for safety and instruction in both official languages Graphic symbols to CAN/CSA-Z321.

.9 Maintain approved signs and notices in good condition for duration of project, and dispose of off-site on completion of project or earlier if directed by the Consultant.

1.14 PROTECTION AND MAINTENANCE OF TRAFFIC

.1 Provide access and temporary relocated roads as necessary to maintain traffic.

.2 Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by the Consultant.

.3 Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs.

.4 Protect travelling public from damage to person and property.

.5 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.

.6 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.

.7 Construct access and haul roads necessary.

.8 Haul roads: constructed with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic shall be avoided.

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

.10 Dust control: adequate to ensure safe operation at all times.

.11 Location, grade, width, and alignment of construction and hauling roads: subject to approval by the Consultant.

.12 Lighting: to assure full and clear visibility for full width of haul road and work areas during night work operations.

.13 Provide snow removal during period of Work.

.14 Remove, upon completion of work, haul roads designated by the Consultant.

1.15 CLEAN-UP

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

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

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

.4 Stack stored new or salvaged material not in construction facilities.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

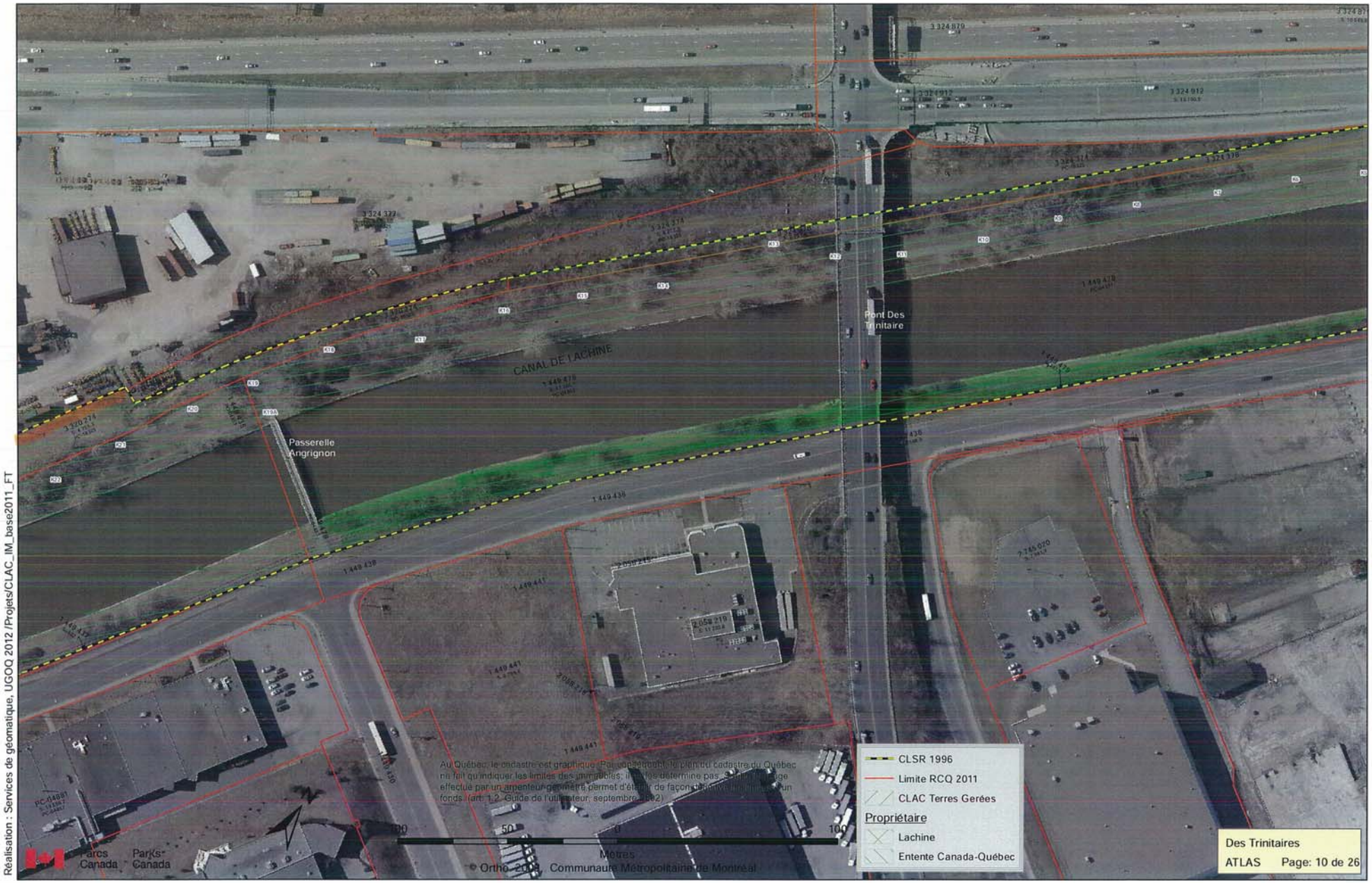
.1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, in compliance with the requirements of the competent authorities.

.2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

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

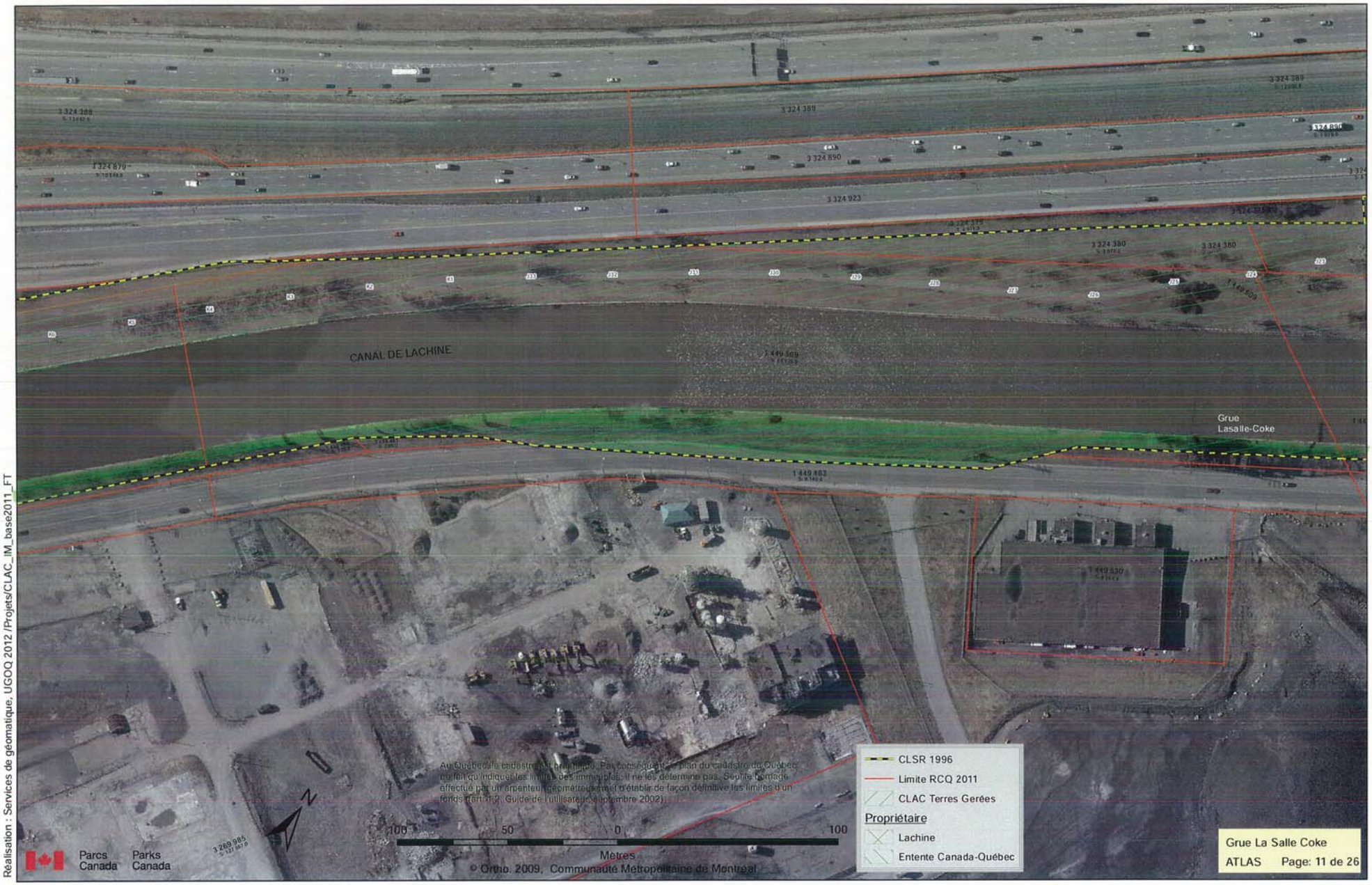
END OF SECTION

LIMITE DE PROPRIÉTÉ DE L'AGENCE PARCS CANADA SECTEUR - BIEF 4
- VOIR EN VERT LA SURFACE - PROPRIÉTÉ DE L'APC.



LIMITE DE PROPRIÉTÉ DE L'AGENCE PARCS CANADA SECTEUR - BIEF 4

- VOIR EN VERT LA SURFACE - PROPRIÉTÉ DE L'APC.

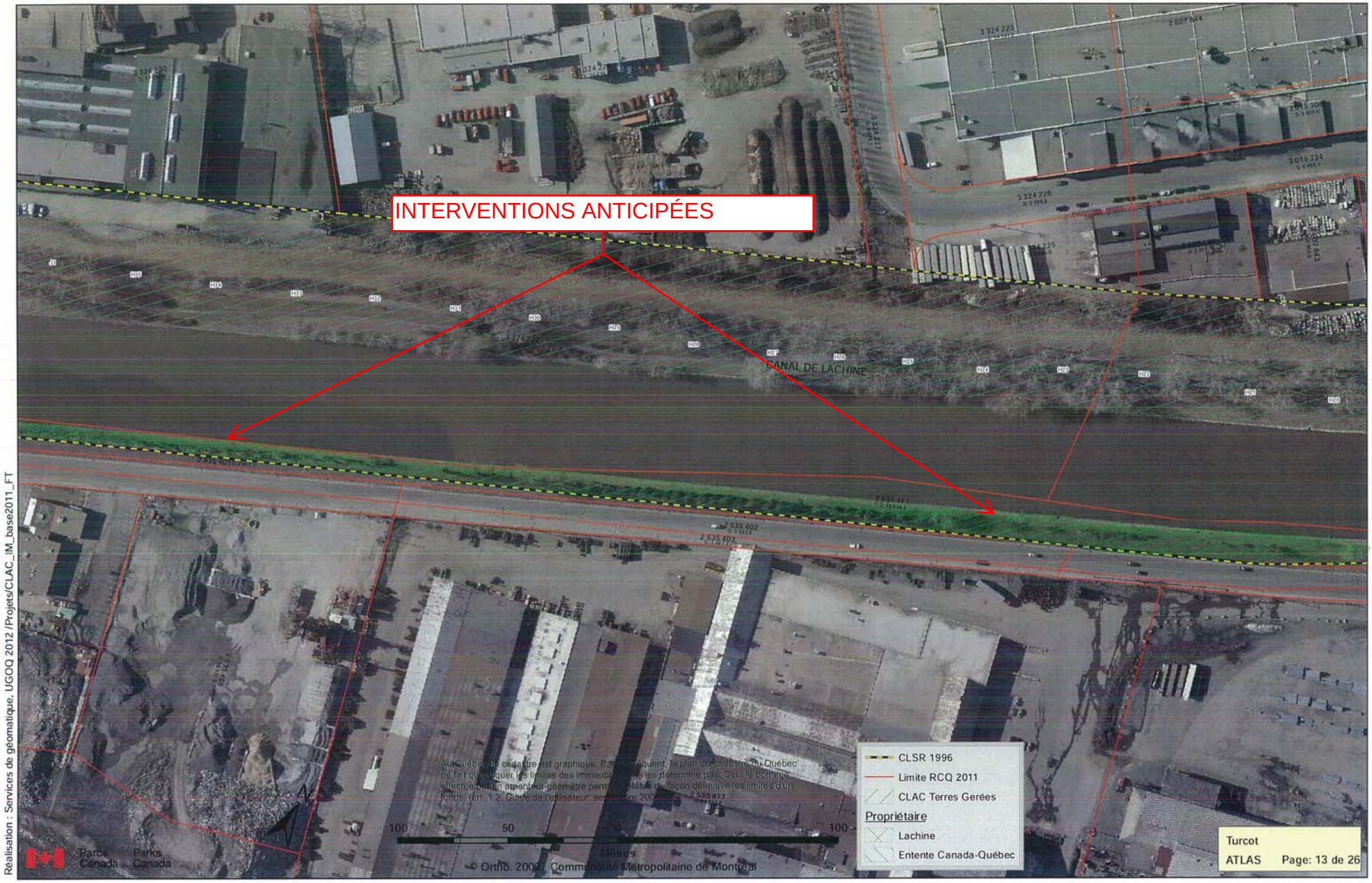


LIMITE DE PROPRIÉTÉ DE L'AGENCE PARCS CANADA SECTEUR - BIEF 4

- VOIR EN VERT LA SURFACE - PROPRIÉTÉ DE L'APC.

LIMITE DE PROPRIÉTÉ DE L'AGENCE PARCS CANADA SECTEUR - BIEF 4

- VOIR EN VERT LA SURFACE - PROPRIÉTÉ DE L'APC.



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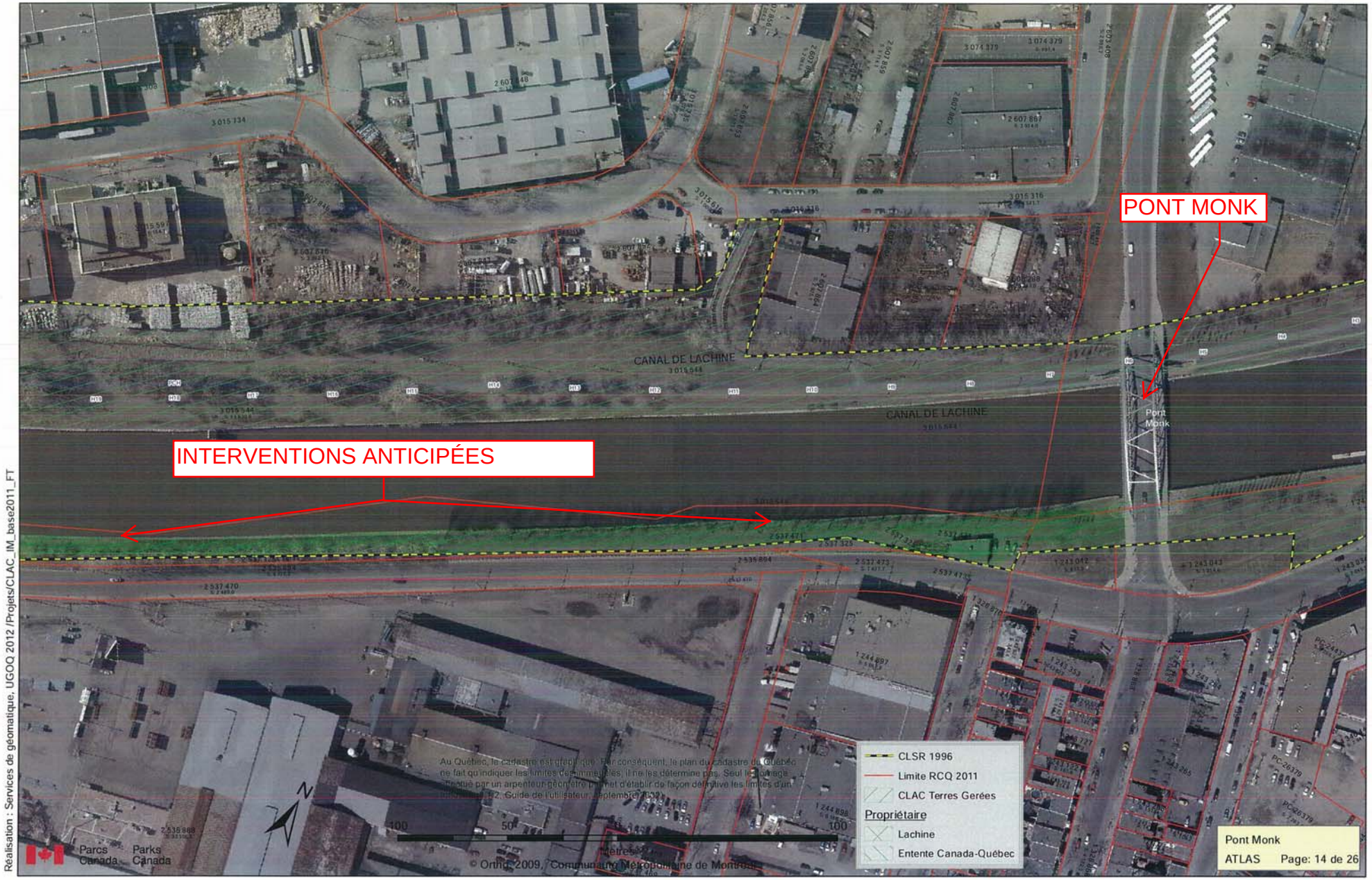
- VOIR EN VERT LA SURFACE - PROPRIÉTÉ DE L'APC.



Secteur : Grue La Salle Coke

CANAL -DE-LACHINE

AUT 20

AUT 20

RUE NOTRE DAME

accès par la Halte Notre-Dame (J16)
accès à pieds ou véhicule
piste cyclable à proximité du mur

K6 K5 K4 K3 K2 K1 J33 J32 J31 J30 J29 J28 J27 J26 J25 J24 J23

pelouse

7.5 km

0.5 km

hydro

friche

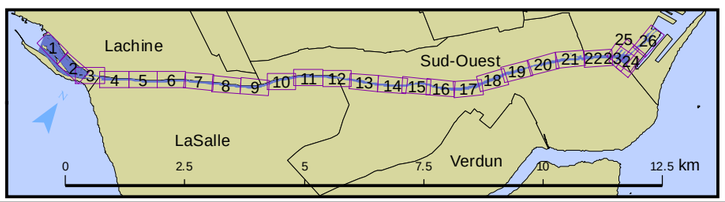
Grue Lasalle-Coke

RUE ST PATRICK

aucune aire de stationnement
aucune piste cyclable
accès à pieds
accessibilité au mur, sauf grue LaSalle Coke en pente

Parcs Canada Parks Canada

Voies navigables du Québec
Quebec Waterways



- pelouse/ Lawn
- friche/ Rough Land
- Aire spécial, 2
- sous bail/ Under Lease
- Massif d'arbutes/ Shurb Bed
- sans entretien/ No Maintenance

0 50 100
Mètres

Projet: Project:
Entretien des pelouses et terrains paysagersdu canal-de-Lachine
The Lachine Canal maintenance of laws and landscaped grounds

Titre du dessin: Drawing title:
Localisation des terrains paysagers du canal-de-Lachine
The Lachine Canal landscaped grounds location

Version appel d'offre

Date: 25-09-2012

Conçu par: François Trudeau — Designed By:

Échelle: Graphique — Scale:

Vérifié par: Brigitte Ayotte / Alain Gagnon — Checked By:

Contrat: 13-0001 — Contract:

Réf. Ministère: CLAC - 18-135. 11E — Ref. Ministry:

Feuille: 11/26 — Sheet:

Secteur : Rue Irwin

CANAL -DE-LACHINE

AUT 20

RUE NOTRE DAME

Halte Notre-Dame,
aire de stationnement
accès à pieds et en véhicule
piste cyclable à proximité du mur

J18 J19 J20 J17 PCJ J22 J16 J15 J14 J13 J12 J11 J10 J9 J8 J7 J6 J5 J4 J3 J2 J1 J16b

friche

pelouse

Passerelle de la Grue Lasalle Coke

7 km

0.5 km

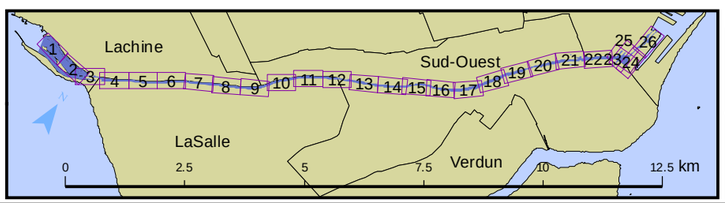
accès à pieds par la passerelle
Notre-Dame

aucune aire de stationnement
le secteur de terrain côté St-Patrick est en pente;
être sécuritaire
accès à pieds
aucune piste cyclable

RUE ST PATRICK

Parcs Canada Parks Canada

Voies navigables du Québec
Quebec Waterways



- pelouse/ Lawn
- friche/ Rough Land
- Aire spécial, 2
- sous bail/ Under Lease
- Massif d'arbutes/ Shurb Bed
- sans entretien/ No Maintenance

0 50 100
Mètres

Version appel d'offre

Date: 25-09-2012

Projet: Entretien des pelouses et terrains paysagersdu canal-de-Lachine
The Lachine Canal maintenance of laws and landscaped grounds

Conçu par: François Trudeau
Designed By:

Échelle: Graphique
Scale:

Titre du dessin: Localisation des terrains paysagers du canal-de-Lachine
The Lachine Canal landscaped grounds location

Vérifié par: Brigitte Ayotte / Alain Gagnon
Checked By:

Contrat: 13-0001
Contract:

Réf. Ministère: CLAC - 18-135. 12E
Ref. Ministry:

Feuille: 12/26
Sheet:

Aires de Stationnements et Accès :
Halte Notre-Dame (J16) ou rue de la Côte St-Paul (H1)
accès à pieds et en véhicule
piste cyclable à proximité du mur

aucune aire de stationnement
accès à pieds
aucune piste cyclable
accessibilité au mur

PLACE TURCOT

RUE ST PATRICK

J1 H35 H34 H33 H32 H31 H30 H29 H28 H27 H26 H25 H24 H23 H22 H21 H20

friche

pelouse

0.5 km

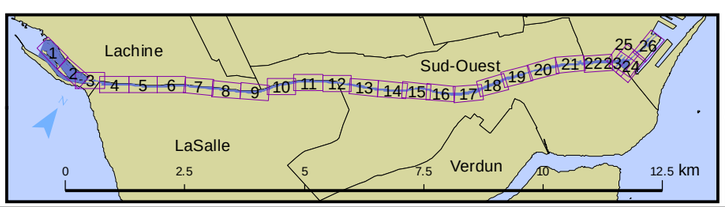
6.5 km

Secteur : Turcot

CANAL -DE-LACHINE

Parcs Canada Parks Canada

Voies navigables du Québec
Quebec Waterways



- pelouse/ Lawn
- friche/ Rough Land
- Aire spécial, 2
- sous bail/ Under Lease
- Massif d'arbutes/ Shurb Bed
- sans entretien/ No Maintenance

0 50 100
Mètres

Projet: Entretien des pelouses et terrains paysagersdu canal-de-Lachine
Project: The Lachine Canal maintenance of laws and landscaped grounds

Titre du dessin: Localisation des terrains paysagers du canal-de-Lachine
Drawing title: The Lachine Canal landscaped grounds location

Version appel d'offre

Date: 25-09-2012

Conçu par: François Trudeau (Designed By:)

Échelle: Graphique (Scale:)

Vérifié par: Brigitte Ayotte / Alain Gagnon (Checked By:)

Contrat: 13-0001 (Contract:)

Réf. Ministère: CLAC - 18-135. 13E (Ref. Ministry:)

Feuille: 13/26 (Sheet:)

aire de stationnement rue Philippe Turcot
accès à pieds ou petit véhicule par
segment de piste cyclable
piste cyclable à proximité du mur

aucune aire de stationnement
aucune piste cyclable
accessibilité au mur à pieds
segment le long de la rue St-Patrick, relativement plat;
jusqu'à la rue Irwin

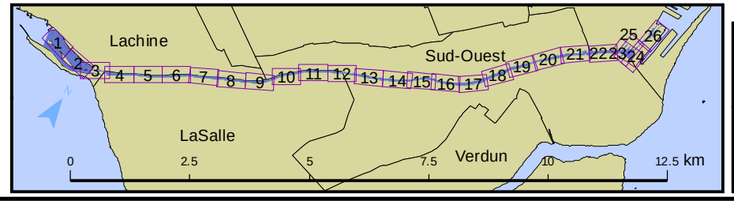
PLACE TURCOT
RUE PHILLIPPE TURCOT
RUE PHILLIPPE TURCOT
RUE ST PATRICK
RUE HAMILTON
RUE BEAULIEU
BOUL MONK
RUE BRUAND
Pont Monk
sans entretien
friche
pelouse
PCH
H19
H18
H17
H16
H15
H14
H13
H12
H11
H10
H9
H8
H7
H6
H5
H4
H3
6 km
0.5 km

Secteur : Pont Monk

CANAL -DE-LACHINE

Parcs Canada Parks Canada

Voies navigables du Québec
Quebec Waterways



- pelouse/ Lawn
- friche/ Rough Land
- Aire spécial, 2
- sous bail/ Under Lease
- Massif d'arbutes/ Shurb Bed
- sans entretien/ No Maintenance

0 50 100
Mètres

Projet: Project:
Entretien des pelouses et terrains paysagersdu canal-de-Lachine
The Lachine Canal maintenance of laws and landscaped grounds

Titre du dessin: Drawing title:
Localisation des terrains paysagers du canal-de-Lachine
The Lachine Canal landscaped grounds location

Version appel d'offre

Date: 25-09-2012

Conçu par: Designed By: François Trudeau

Échelle: Scale: Graphique

Vérifié par: Checked By: Brigitte Ayotte / Alain Gagnon

Contrat: Contract: 13-0001

Réf. Ministère: Ref. Ministry: CLAC - 18-135. 14E

Feuille: Sheet: 14/26

PHOTO 01- Existing Conditions

Photo 02- Typical existing repairs

PHOTO 03 - Typical existing repairs

Photo 04 - Typical existing repairs

PHOTO 05- Typical damage to be repaired

Photo 06- Typical damage to be repaired

PHOTO 07 - Typical damage to be repaired

Photo 08 - Typical damage to be repaired

PHOTO 09 – Water level at ±8 feet lower

Photo 10- Typical damage to be repaired

PHOTO 11 - Typical damage to be repaired

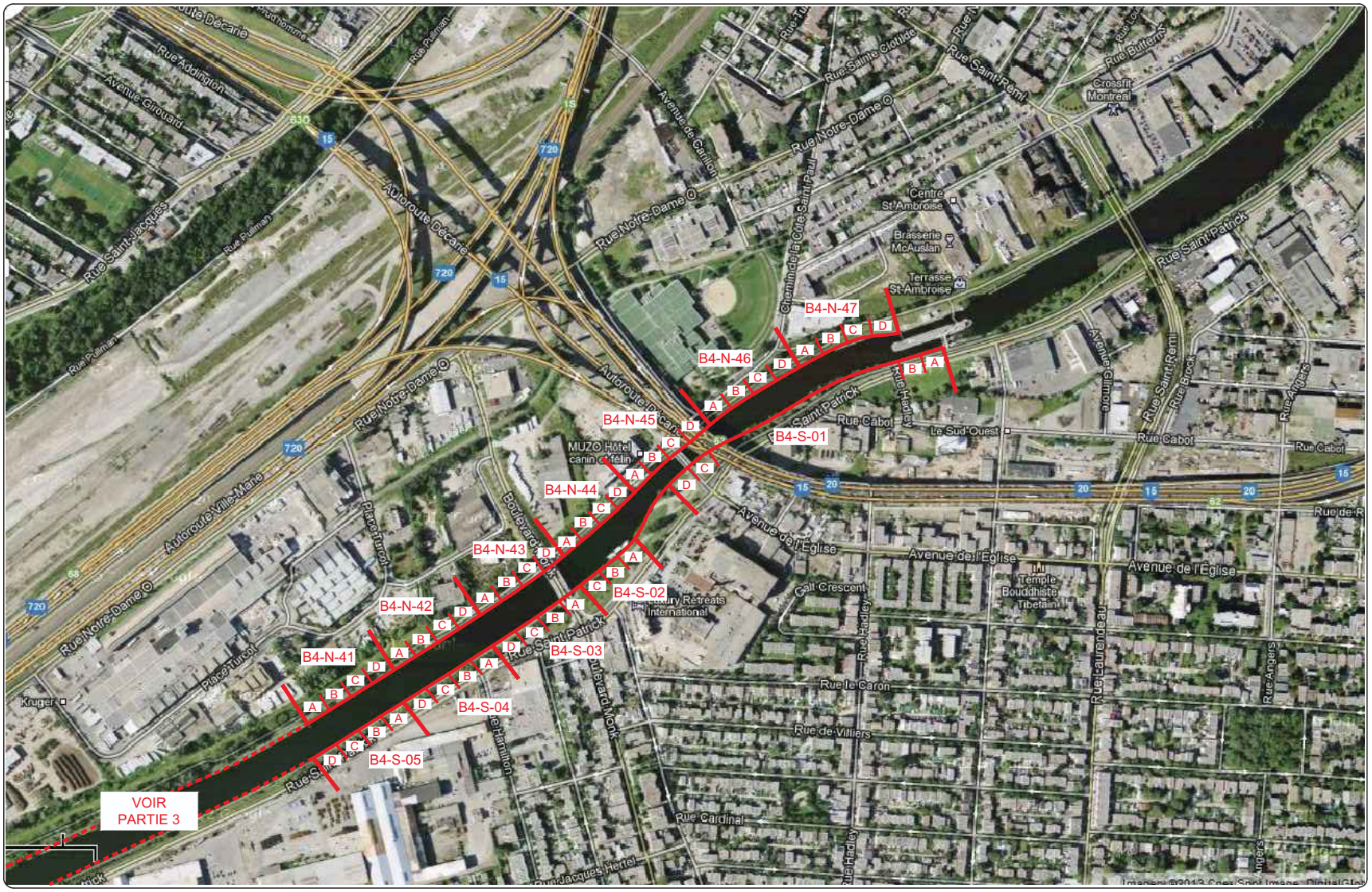
Photo 12 - Typical damage to be repaired

PHOTO 13 - Typical damage to be repaired

Photo 14 - Typical damage to be repaired rer

PHOTO 15 - Typical damage to be repaired

Photo 16 - Typical damage to be repaired



PLAN CLÉ - PARTIE 4

SANS ÉCHELLE

INDEX PARTIE 4

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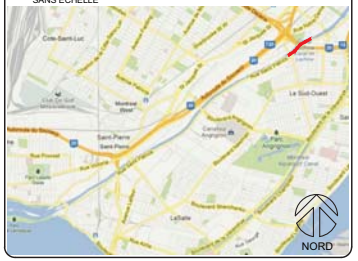
45	B4-N-41	52	B4-S-01
46	B4-N-42	53	B4-S-02
47	B4-N-43	54	B4-S-03
48	B4-N-44	55	B4-S-04
49	B4-N-45	56	B4-S-05
50	B4-N-46		
51	B4-N-47		

PLAN DE LOCALISATION PARTIE 4

SANS ÉCHELLE



Public Works and Government Services Canada / Travaux publics et services gouvernementaux Canada

Heritage Conservation Directorate
Public Works and Government Services Canada
Real Property Branch
Professional and Technical Service Management

Direction de la conservation du patrimoine
Travaux publics et services gouvernementaux Canada
Direction générale des biens immobiliers
Gestion des programmes professionnels et techniques

NOTES

–CE RELEVÉ A ÉTÉ EFFECTUÉ EN UTILISANT LES UNITÉS DU SYSTÈME INTERNATIONAL.

–LES INFORMATIONS CONTENUES SUR CE DESSIN N'ONT PAS ÉTÉ VÉRIFÉES SUR LE CHANTIER.

–LA PRÉCISION DU RELEVÉ EST ±200mm.

–LES DESSINS ONT ÉTÉ PRÉPARÉS EN 2012–13 À PARTIR DES DONNÉES RECUEILLIES EN 2008–09. L'ÉTAT DES MURS PEUT AVOIR CHANGÉ DEPUIS CETTE DATE.

KEY PLAN
PLAN–REPÈRE

revision		date
06		
05		
04		
03		
02		
01		

A detail no. no. du détail
B key location empl. clé
C detail location empl. du détail

project / projet

MURS DU CANAL LACHINE, MONTRÉAL, QUÉBEC BIEF 4

RELEVÉ DU PATRIMOINE, 2008–2009

drawing / dessin

PLAN CLÉ – PARTIE 4, INDEX PARTIE 4 ET PLAN LOCALISATION PARTIE 4

designed / conçu	
date	
drawn / dessiné	C.BOUCHARD/W.SAWYER
date	DÉCEMBRE 2012 – FÉVRIER 2013
reviewed / examiné	J.GREGG
date	FÉVRIER 2013
approved / approuvé	
date	
tender / soumission	
Project Manager / Administrateur de projets	
project no. / no. du projet	R.061915.001/R.059192.019
drawing no. / no. du dessin	04 de 95

Scale 1 : 1

PWGSC / TPSGC B1

0mm10 20 40 60 80 100 120 140 160 180 200 mm

VOIR B4-S-01-D

BIEF 4 - SUD - 02 - A

1 : 50

BIEF 4 - SUD - 02 - B

1 : 50

VOIR B4-S-03-A

BIEF 4 - SUD - 02 - C

1 : 50

0 1 2 3 4 5m

1:50

Scale 1 : 1

PWGSC / TPSGC B1

0mm10 20 40 60 80 100 120 140 160 180 200 mm

Public Works and Government Services Canada / Travaux publics et services gouvernementaux Canada

Heritage Conservation Directorate
Public Works and Government Services Canada
Real Property Branch
Professional and Technical Service Management

Direction de la conservation du patrimoine
Travaux publics et services gouvernementaux Canada
Direction générale des biens immobiliers
Gestion des programmes professionnels et techniques

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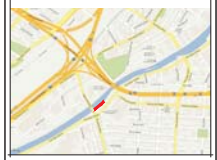
PLAN CLÉ DU CANAL LACHINE, BIEF4–PARTIE 4



KEY PLAN
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MURS DU CANAL LACHINE, MONTRÉAL, QUÉBEC
BIEF 4

RELEVÉ DU PATRIMOINE, 2008–2009

drawing / dessin

PARTIE 4
B4–S–02
A,B,C

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date
drawn / dessiné C.BOUCHARD/W.SAWYER
date DÉCEMBRE 2012 – FÉVRIER 2013
reviewed / examiné J.GREGG
date FÉVRIER 2013
approved / approuvé
date
tender / soumission
Project Manager / Administrateur de projets
project no. / no. du projet R.061915.001/R.059192.019
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VOIR B4-S-02-C

BIEF 4 - SUD - 03 - A

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BIEF 4 - SUD - 03 - B

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BIEF 4 - SUD - 03 - C

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BIEF 4 - SUD - 03 - D

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VOIR B4-S-04-A

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Scale 1 : 1

PWGSC / TPSGC B1

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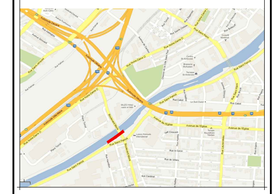

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VOIR B4-S-03-D

BIEF 4 - SUD - 04 - A

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BIEF 4 - SUD - 04 - B

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BIEF 4 - SUD - 04 - C

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VOIR B4-S-05-A

BIEF 4 - SUD - 04 - D

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PWGSC / TPSGC B1

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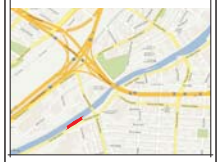

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VOIR B4–S–04–D

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BIEF 4 - SUD - 05 - B

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BIEF 4 - SUD - 05 - C

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Scale 1 : 1

PWGSC / TPSGC B1

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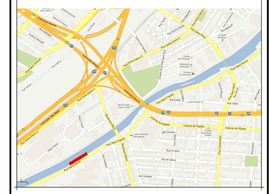

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BIEF 4 - SUD - 06 - D

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Scale 1 : 1

PWGSC / TPSGC B1

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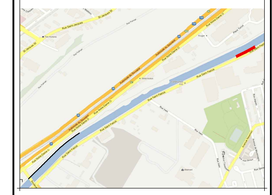

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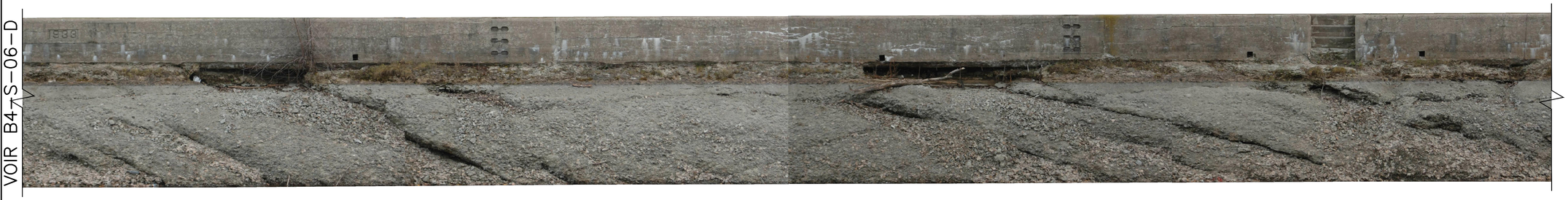

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VOIR B4-S-08-A

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Scale 1 : 1

PWGSC / TPSGC B1

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VOIR B4-S-07-D

BIEF 4 - SUD - 08 - A

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BIEF 4 - SUD - 08 - B

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BIEF 4 - SUD - 08 - C

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BIEF 4 - SUD - 08 - D

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VOIR B4-S-09-A

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Scale 1 : 1

PWGSC / TPSGC B1

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VOIR B4-S-08-D

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BIEF 4 - SUD - 09 - B

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BIEF 4 - SUD - 09 - C

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Scale 1 : 1

PWGSC / TPSGC B1

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VOIR B4–S–13–D

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BIEF 4 - SUD - 14 - B

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BIEF 4 - SUD - 14 - C

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VOIR B4–S–15–A

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Scale 1 : 1

PWGSC / TPSGC B1

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VOIR B4-S-14-D

BIEF 4 - SUD - 15 - A

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BIEF 4 - SUD - 15 - B

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BIEF 4 - SUD - 15 - C

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VOIR B4-S-16-A

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Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 02 41 99 – DEMOLITION FOR MINOR WORKS

.2 Section 03 10 00 – CONCRETE FORMING AND ACCESSORIES

.3 Section 03 20 00 – CONCRETE REINFORCING

.4 Section 03 30 00 – CAST-IN-PLACE CONCRETE

.5 Section 03 30 03 – CONCRETE REPAIR

.6 Section 03 37 13 – SHOTCRETE

1.2 REFERENCES

.1 Canadian General Standards Board (CGSB)

.1 CGSB 1.59-97, Alkyd Exterior Gloss Enamel.

.2 CAN/CGSB 1.189-00, Exterior Alkyd Primer for Wood.

.2 Canadian Standards Association (CSA International)

.1 CSA-O121-FM1978(C2003), Douglas Fir Plywood.

.3 Public Works Government Services Canada (PWGSC) Standard Acquisition Clauses and Conditions (SACC)-ID: R0202D, Title: General Conditions 'C', In Effect as Of: May 14, 2004.

1.3 INSTALLATION AND REMOVAL

.1 Provide temporary controls in order to execute Work expeditiously.

.2 Remove from site all such work after use.

1.4 HOARDING

.1 Erect temporary site enclosures using 38 x 89 mm construction grade lumber framing at 600 mm centres and 1200 x 2400 x 13 mm exterior grade fir plywood to CSA O121.

.2 Apply plywood panels vertically as indicated flush and butt jointed.

.3 Provide one lockable truck entrance gate gates and at least one pedestrian door as directed and conforming to applicable traffic restrictions on adjacent streets. Equip gates with locks and keys.

.4 Erect and maintain pedestrian walkways including roof and side covers, complete with signs and electrical lighting as required by law.

.5 Paint public side of site enclosure in selected colours with one coat primer to CAN/CGSB 1.189 and one coat exterior paint to CGSB 1.59. Maintain public side of enclosure in clean condition.

.6 Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures.

1.5 GUARD RAILS AND BARRICADES

.1 Provide secure, rigid guard rails and barricades around deep excavations, unenclosed stairwells, and along the edge of the Canal.

.2 Provide as required by the Consultant as indicated.

1.6 DUST TIGHT SCREENS

.1 Provide dust tight screens or insulated partitions to localize dust generating activities, and for protection of workers, finished areas of Work and public.

.2 Maintain and relocate protection until such work is complete.

.3 In the event of breakage or vandalism, repair or replace the dust cover screens.

1.7 TEMPORARY ACCESS STRUCTURES

.1 Comply with laws, regulations, intergovernmental agreements or decrees from authorities which may at any time and in any way affect the work, labor, equipment, and materials.

.2 Take responsibility and bear the costs of any claim or obligation that intend to break such laws, regulations, or decrees by the Contractor or its subcontractors or their respective employees.

.3 Before starting work, the Contractor shall obtain, at his own expense, any licenses or permits required by the laws, decrees, or regulations.

.4 Describe, on the drawings of the temporary structures, the proposed method used for the repair of a permanent structure.

.5 Shop Drawings, design calculations, and the Work Plan must be prepared, signed, and sealed by a professional engineer registered member in good standing of the *Ordre des ingénieurs du Québec*. The Work Plan must include structural calculations, the assumptions used for the calculations, the sequence of assembly and disassembly of the various elements, and any other related element.

1.8 ACCESS TO SITE

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

1.9 PUBLIC TRAFFIC FLOW

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

1.10 FIRE ROUTES

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

1.11 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

.1 Protect surrounding private and public property from damage during performance of Work.

.2 Be responsible for damage incurred.

1.12 WASTE MANAGEMENT AND DISPOSAL

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

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 03 10 00 – CONCRETE FORMING AND ACCESSORIES

.2 Section 03 20 00 – CONCRETE REINFORCING

.3 Section 03 30 00 – CAST-IN-PLACE CONCRETE

.4 Section 03 30 03 – CONCRETE REPAIR

.5 Section 03 37 13 – SHOTCRETE

1.2 REFERENCES

.1 If there is question as to whether products or systems are in conformance with applicable standards, the Consultant reserves right to have such products or systems tested to prove or disprove conformance.

.2 Cost for such testing will be borne by the Consultant in event of conformance with Contract Documents or by Contractor in event of non-conformance.

1.3 QUALITY

.1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.

.2 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of work.

.3 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve Contractor responsibility, but is precaution against oversight or error. The Contractor must remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.

.4 Should disputes arise as to quality or fitness of products, decision rests strictly with the Consultant based upon requirements of Contract Documents.

.5 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.

.6 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.4 AVAILABILITY

.1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify

the Consultant of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.

.2 In event of failure to notify the Consultant at commencement of Work and should it subsequently appear that Work may be delayed for such reason, the Consultant reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.5 STORAGE, HANDLING AND PROTECTION

.1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.

.2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.

.3 Store products subject to damage from weather in weatherproof enclosures.

.4 Store cementitious products clear of earth or concrete floors, and away from walls.

.5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.

.6 Construction timber, sheet materials, panel materials, and timber on rigid supports must be placed flat such that they do not rest directly on the ground. Provide a gentle slope to encourage the flow of condensate.

.7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.

.8 Remove and replace damaged products at own expense and to satisfaction of the Consultant.

.9 Touch-up damaged factory finished surfaces to satisfaction of the Consultant. Use touch-up materials to match original. Do not paint over name plates.

1.6 TRANSPORTATION

.1 Pay costs of transportation of products required in performance of Work.

1.7 MANUFACTURER'S INSTRUCTIONS

.1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.

.2 Notify the Consultant in writing, of conflicts between specifications and manufacturer's instructions, so that the Consultant will establish course of action.

.3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes the Consultant to require removal and re-installation at no increase in Contract Price or Contract Time.

1.8 QUALITY OF WORK

.1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify the Consultant if required Work is such as to make it impractical to produce required results.

.2 Do not employ anyone unskilled in their required duties. The Consultant reserves right to require dismissal from site, workers deemed incompetent or careless.

.3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with the Consultant whose decision is final.

1.9 CO-ORDINATION

.1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.

.2 Contractor be responsible for coordination and placement of openings, sleeves and accessories.

1.10 CONCEALMENT

.1 In finished areas conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.

.2 Before installation inform the Consultant if there is interference. Install as directed by the Consultant.

1.11 REMEDIAL WORK

.1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as required.

.2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.12 FASTENINGS

.1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.

.2 Prevent electrolytic action between dissimilar metals and materials.

.3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.

.4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.

.5 Keep exposed fastenings to a minimum, space evenly and install neatly.

.6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

1.13 FASTENINGS - EQUIPMENT

.1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.

.2 Bolts may not project more than one diameter beyond nuts.

.3 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

1.14 PROTECTION OF WORK IN PROGRESS

.1 Prevent overloading of parts of building. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated with written approval of the Consultant.

1.15 EXISTING UTILITIES

.1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work and pedestrian and vehicular traffic.

.2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 02 41 99 – DEMOLITION FOR MINOR WORKS

1.2 QUALIFICATIONS OF SURVEYOR

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

1.3 SURVEY REFERENCE POINTS

.1 Existing base horizontal and vertical control points are designated on drawings.

.2 Locate, confirm and protect control points prior to starting site work. Preserve permanent reference points during construction.

.3 Make no changes or relocations without prior written notice to the Consultant.

.4 Report to the Consultant when reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.

.5 Require surveyor to replace control points in accordance with original survey control.

1.4 SURVEY REQUIREMENTS

.1 Establish (1) permanent bench marks on site, referenced to established bench marks by survey control points. Record locations, with horizontal and vertical data in Project Record Documents.

.2 Establish lines and levels, locate and lay out, by instrumentation.

.3 Stake for grading, fill and topsoil placement and landscaping features.

.4 Stake slopes.

1.5 EXISTING SERVICES

.1 Before commencing work, establish location and extent of service lines in area of Work and notify the Consultant of findings.

.2 Remove abandoned service lines within 2 m of structures. Cap or otherwise seal lines at cut-off points as directed by the Consultant.

1.6 RECORDS

.1 Maintain a complete, accurate log of control and survey work as it progresses.

.2 On completion of foundations and major site improvements, prepare a certified survey showing dimensions, locations, angles and elevations of Work.

.3 Record locations of maintained, re-routed and abandoned service lines.

1.7 ACTION AND INFORMATIONAL SUBMITTALS

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

1.8 SUBSURFACE CONDITIONS

.1 Promptly notify the Consultant in writing if subsurface conditions at Place of Work differ materially from those indicated in Contract Documents, or a reasonable assumption of probable conditions based thereon.

.2 After prompt investigation, should the Consultant determine that conditions do differ materially, instructions will be issued for changes in Work as provided in Changes and Change Orders.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 02 41 99 – DEMOLITION FOR MINOR WORKS

.2 Section 03 10 00 – CONCRETE FORMING AND ACCESSORIES

.3 Section 03 20 00 – CONCRETE REINFORCING

.4 Section 03 30 00 – CAST-IN-PLACE CONCRETE

.5 Section 03 30 03 – CONCRETE REPAIR

.6 Section 03 37 13 – SHOTCRETE

1.2 INFORMATION DISPONIBLE DE L'EXISTANT À CONSULTER

.1 Parks Canada provides Contractors with the information available regarding the Canal Lachine walls.

.2 The PCA does not guarantee the accuracy of the information contained in the available documents as described above and assumes no responsibility with respect thereto.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Submit written request in advance of cutting or alteration which affects:

- .1 Structural integrity of elements of project.
- .2 Integrity of weather-exposed or moisture-resistant elements.
- .3 Efficiency, maintenance, or safety of operational elements.
- .4 Visual qualities of sight-exposed elements.
- .5 Work of Owner or separate contractor.

.3 Include in request:

- .1 Identification of project.
- .2 Location and description of affected Work.
- .3 Statement on necessity for cutting or alteration.
- .4 Description of proposed Work, and products to be used.
- .5 Alternatives to cutting and patching.
- .6 Effect on Work of Owner or separate contractor.
- .7 Written permission of affected separate contractor.
- .8 Date and time work will be executed.

1.4 MATERIALS

.1 Required for original installation.

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

1.5 PREPARATION

.1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.

.2 After uncovering, inspect conditions affecting performance of Work.

.3 Beginning of cutting or patching means acceptance of existing conditions.

.4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.

.5 Provide protection from elements for areas which are to be exposed by uncovering work; maintain excavations free of water.

1.6 EXECUTION

.1 Execute cutting, fitting, and patching [including excavation and fill,] to complete Work.

.2 Fit several parts together, to integrate with other Work.

.3 Remove and replace defective and non-conforming Work.

.4 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.

.5 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.

.6 Restore work with new products in accordance with requirements of Contract Documents.

.7 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

.8 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.

1.7 WASTE MANAGEMENT AND DISPOSAL

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

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 01 35 43 – Environnemental Procedures

.2 Section 01 74 21 – Construction/Demolition waste management and disposal

1.2 REFERENCES

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-94, Stipulated Price Contract.

1.3 PROJECT CLEANLINESS

.1 Maintain Work in tidy condition, free from accumulation of waste products and debris.

.2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by the Consultant. Do not burn waste materials on site, unless approved by the Consultant.

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

.4 Provide on-site containers for collection of waste materials and debris.

.5 Provide and use marked separate bins for recycling. Refer to Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.6 Dispose of waste materials and debris at designated dumping areas on Crown property, off site.

.7 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.

.8 Store volatile waste in covered metal containers, and remove from premises at end of each working day.

.9 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

.10 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.4 FINAL CLEANING

.1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.

.2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.

.3 Prior to final review remove surplus products, tools, construction machinery and equipment.

.4 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures.

.5 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.

.6 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.

.7 Remove dirt and other disfiguration from exterior surfaces.

1.5 WASTE MANAGEMENT AND DISPOSAL

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

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 WASTE MANAGEMENT GOALS

.1 Prior to start of Work, conduct meeting with the Consultant to review and discuss Parks Canada Agency (PCA) waste management goals.

.2 Parks Canada Agency (PCA) waste management goal: to divert a minimum 75 percent of total Project Waste from landfill sites.

.3 Prior to project completion provide the Consultant documentation certifying that waste management, recycling, reuse of recyclable and reusable materials have been extensively practiced.

.4 Minimize amount of non-hazardous solid waste generated by project and accomplish maximum source reduction, reuse and recycling of solid waste produced by CRD activities.

.5 Protect environment and prevent environmental pollution damage.

1.2 RELATED REQUIREMENTS

.1 Section 01 35 43 – ENVIRONMENTAL PROCEDURES

.2 Section 01 74 11 – CLEANING

1.3 REFERENCES

.1 Definitions:

.1 Class III: non-hazardous waste - construction renovation and demolition waste.

.2 Cost/Revenue Analysis Workplan (CRAW): based on information from Waste Reduction Workplan, and intended as financial tracking tool for determining economic status of waste management practices. .

.3 Audit des déchets de démolition (ADD) : S'applique aux déchets effectivement générés par les travaux

.4 Inert Fill : inert waste - exclusively asphalt and concrete.

.5 Waste Source Separation Program (WSSP) : implementation and co-ordination of ongoing activities to ensure designated waste materials will be sorted into pre-defined categories and sent for recycling and reuse, maximizing diversion and potential to reduce disposal costs.

.6 Recyclable : ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse.

.7 Recycle : process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.

.8 Recycling : process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.

.9 Reuse : repeated use of product in same form but not necessarily for same purpose. Reuse includes:

.1 Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.

.2 Returning reusable items including pallets or unused products to vendors.

.10 Salvage : removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.

.11 Separate Condition : refers to waste sorted into individual types.

.12 Source Separation : act of keeping different types of waste materials separate beginning from the point they became waste.

.13 Waste Audit (WA) : detailed inventory of estimated quantities of waste materials that will be generated during construction, demolition, deconstruction and/or renovation. Involves quantifying by volume/weight amounts of materials and wastes that will be reused, recycled or landfilled. Refer to Schedule A.

.14 Waste Management Co-ordinator (WMC) : contractor representative responsible for supervising waste management activities as well as co-ordinating required submittal and reporting requirements.

.15 Waste Reduction Workplan (WRW) : written report which addresses opportunities for reduction, reuse, or recycling of materials generated by project. Specifies diversion goals, implementation and reporting procedures, anticipated results and responsibilities. Waste Reduction Workplan (Schedule B) information acquired from Waste Audit.

1.4 DOCUMENTS

.1 Post and maintain in visible and accessible area at job site, one copy of following documents:

.1 Waste Audit

.2 Waste Reduction Workplan

.3 Waste Source Separation Program.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Prepare and submit following prior to project start-up:

.1 Two (2) copies of completed Waste Audit (WA): Schedule A.

.2 Two (2) copies of completed Waste Reduction Workplan (WRW): Schedule B.

.3 Two (2) copies of the Demolition Waste Audit (DWA): Schedule C.

.4 Two (2) copies of Cost/Revenue Analysis Workplan (CRAW): Schedule E.

.5 Two (2) copies of Waste Source Separation Program (WSSP).

.3 Submit prior to final payment the following:

.1 Waste Diversion Report, indicating final quantities by material types salvaged for reuse, recycling or disposal in landfill and recycling centres, re-use depots, landfills and other waste processors that received waste materials (See Schedule C).

.2 Failure to submit the required report could result in the withholding of final payment.

.3 For each waste material generated by the project and recycled/reused, recycled, or sold, indicate the quantity in kilograms, the type, and the destination.

.4 Provide receipts, scale tickets, waybills, waste disposal receipts that confirm quantities and types of materials reused, recycled or disposed of and destination.

1.6 WASTE AUDIT (WA)

.1 Perform the Waste Audit (WA) prior to project start-up.

.2 Prepare WA (Schedule A).

.3 Indicate on the WA (Schedule A) the quantities and types of waste materials that will be generated as well as their potential to be reused and/or recycled.

1.7 WASTE REDUCTION WORKPLAN (WRW)

.1 Prepare and submit WRW prior to project start-up.

.2 WRW should include but not limited to:

.1 Destination of materials identified.

.2 Deconstruction/disassembly techniques and sequencing.

.3 Deconstruction/disassembly schedules.

.4 Location of waste bins on-site.

.5 Security of on-site stock piles and waste bins.

.6 Protection of personnel, sub-contractors.

.7 Clear labelling of storage areas.

.8 Details on materials handling and removal procedures.

.9 Quantities of materials to be salvaged for reuse or recycled and materials sent to landfill.

.3 Structure WRW to prioritize actions and follow 3R's hierarchy, with Reduction as first priority, followed by Reuse, then Recycle.

.4 WRW must describe the proposed waste management methods.

.5 Based on the information indicated in the WA, identify opportunities to Reduce, Reuse, and Recycle waste materials.

.6 Post WRW or summary where workers at site are able to review content.

.7 Set realistic waste reduction goals; determine existing limitations and develop strategies to eliminate them.

.8 Monitor and report on waste reduction by documenting total volume (in tonnes) and cost of actual waste removed from project.

1.8 DEMOLITION WASTE AUDIT (DWA)

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

.2 Prepare DWA (Schedule C).

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

1.9 COST/REVENUE ANALYSIS WORKPLAN (CRAW)

.1 Prepare CRAW (see Schedule D).

1.10 WASTE SOURCE SEPARATION PROGRAM (WSSP)

.1 As part of Waste Reduction Workplan, prepare WSSP prior to project start-up.

.2 WSSP will detail methodology and planned on-site activities for separation of reusable and recyclable materials from waste intended for landfill.

.3 Provide sufficient on-site facilities and containers for collection, handling, and storage of anticipated quantities of reusable and recyclable materials.

.4 Provide containers in which materials for reuse and recycling will be deposited.

.5 Locate containers to facilitate deposit of materials without hindering daily operations.

.6 Locate separated materials in areas which minimize material damage.

.7 Waste materials must be collected, handled, and stored on-site and evacuated once sorted:

.1 Recovered waste materials must be transported to users of recycled waste materials.

.8 Waste materials must be collected, handled, and stored on site and evacuated unsorted:

.1 Recovered waste materials must be shipped to a site operated under a certificate of approval.

.2 Waste materials must be sorted into relevant categories for reuse or recycling.

1.11 STORAGE, HANDLING AND PROTECTION

.1 Store, materials to be reused, recycled and salvaged in locations as directed by the Consultant.

.2 Unless specified otherwise, materials for removal become Contractor's property.

.3 Protect, stockpile, store and catalogue salvaged items.

.4 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.

.5 Separate and store materials produced during project in designated areas.

.6 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated processing facilities.

.1 On-site source separation is recommended.

.2 Remove co-mingled materials to off site processing facility for separation.

.3 Obtain waybills, receipts and/or scale tickets for separated materials removed from site.

1.12 DISPOSAL OF WASTES

.1 Do not bury rubbish or waste materials.

.2 Do not dispose of waste or volatile materials into waterways, storm, or sanitary sewers.

.3 Keep records of construction waste including:

.1 Number and size of bins.

.2 Waste type of each bin.

.3 Total tonnage generated.

.4 Tonnage reused or recycled.

.5 Reused or recycled waste destination.

.4 Remove materials on-site as Work progresses.

.5 Prepare project summary to verify destination and quantities on a material-by-material basis as identified in the waste audit.

1.13 SCHEDULING

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

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 APPLICATION

.1 Do Work in compliance with WRW.

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

3.2 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 – Cleaning.

.2 The work zone must be continually cleaned.

.3 Waste Management: separate waste materials for reuse/recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal. Source separate materials to be reused/recycled into specified sort areas.

3.3 DIVERSION OF MATERIALS

.1 From following list, separate materials from general waste stream and stockpile in separate piles or containers, as reviewed by the Consultant, and consistent with applicable fire regulations.

.1 Mark containers or stockpile areas.

.2 Provide instruction on disposal practices.

.2 On-site sale of materials is not permitted.

.3 Demolition Waste:

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

.1 Construction Waste:

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

3.4 WASTE AUDIT (WA)

.1 Schedule A – Waste Audit (WA)

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

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

3.5 WASTE REDUCTION WORKPLAN (WRW)

.1 Schedule B

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

(1) Material Category	(2) Person(s) Respon-sible	(3) Total Quantity of Waste (unit)	(4) Reused Amount (units) Projected	(5) Actual Amount	(6) Recycled Amount (unit) Projected	(7) Actual Amount Recycled	(8) Material(s) Destina-tion
Other							
Wood							
Metal							
Concrete							

3.6 DEMOLITION WASTE AUDIT (DWA)

.1 Schedule C – Demolition Waste Audit (DWA)

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

3.7 COST/REVENUE ANALYSIS WORKPLAN (CRAW)

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

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

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

3.8 CANADIAN GOVERNMENTAL DEPARTMENTS CHIEF RESPONSIBILITY FOR THE ENVIRONMENT

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

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

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 01 78 00 – CLOSEOUT SUBMITTALS

1.2 REFERENCES

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2008, Stipulated Price Contract.

.2 DOC 14-2000, Design-Build Stipulated Price Contract.

.3 DOC 15-2000, Design-Builder/ Consultant Contract.

.2 Canadian Environmental Protection Act (CEPA)

.1 SOR/2008-197, Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations.

1.3 ADMINISTRATIVE REQUIREMENTS

.1 Acceptance of Work Procedures:

.1 Contractor's Inspection: the Contractor shall conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.

.1 Notify the Consultant in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.

.2 Present a request for the Works to be inspected by the Consultant.

.2 Consultant’s Inspection:

.1 The Consultant and the Contractor shall inspect Work and identify defects and deficiencies.

.2 Contractor to correct Work as directed.

.3 Completion Tasks: submit written certificates in French that tasks have been performed as follows:

.1 Work: completed and inspected for compliance with Contract Documents.

.2 Defects: corrected and deficiencies completed.

.3 Work: complete and ready for final inspection.

.4 Final Inspection:

.1 When completion tasks are done, request final inspection of Work by the Consultant, and Contractor.

.2 When Work incomplete according to the Consultant, complete outstanding items and request re-inspection.

.5 Declaration of Substantial Performance: when the Consultant considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.

.6 Commencement of Lien and Warranty Periods: date of Owner's acceptance of submitted declaration of Substantial Performance to be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.

.7 Final Payment:

.1 When the Consultant considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.

.2 When Work deemed incomplete by the Consultant, complete outstanding items and request re-inspection.

.8 Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with contractual agreement.

1.4 FINAL CLEANING

.1 Clean in accordance with Section 01 74 11 – Cleaning.

.1 Remove surplus materials, excess materials, rubbish, tools and equipment.

.2 Waste Management: separate waste materials for reuse/recycling in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 01 77 00 – CLOSEOUT PROCEDURES

1.2 REFERENCES

.1 Canadian Environmental Protection Act (CEPA)

.1 SOR/2008-197, Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations.

1.3 ADMINISTRATIVE REQUIREMENTS

.1 Pre-warranty Meeting:

.1 Convene meeting one (1) week prior to contract completion with Contractor's representative and the Consultant, in accordance with Section 01 31 19 – Project Meetings.

.2 The Consultant shall establish communication procedures for:

.1 Notifying construction warranty defects.

.2 Determine priorities for type of defects.

.3 Determine reasonable response time.

.3 Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.

.4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 When requested, provide documents confirming the type, supplier, and quality of the products installed.

1.5 FORMAT

.1 Organize data as instructional manual.

.2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.

.3 When multiple binders are used correlate data into related consistent groupings.

.1 Identify contents of each binder on spine.

.4 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.

.5 Arrange content by systems and process flow under Section numbers and sequence of Table of Contents.

.6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.

.7 Text: manufacturer's printed data, or typewritten data.

.8 Drawings: provide with reinforced punched binder tab.

.1 Bind in with text; fold larger drawings to size of text pages.

.9 Provide 1:1 scaled CAD files in .dwg format on CD.

1.6 CONTENTS - PROJECT RECORD DOCUMENTS

.1 Table of Contents for Each Volume: provide title of project;

.1 Date of submission; names.

.2 Addresses, and telephone numbers of Consultant and Contractor with name of responsible parties.

.3 Schedule of products and systems, indexed to content of volume.

.2 For each product or system:

.1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

.3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.

.4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.

.5 Typewritten Text: as required to supplement product data.

.1 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.

1.7 AS -BUILT DOCUMENTS AND SAMPLES

.1 Maintain, at site for Surveillant des travaux one record copy of:

.1 Contract Drawings.

.2 Specifications.

.3 Addenda.

.4 Change Orders and other modifications to Contract.

.5 Reviewed shop drawings, product data, and samples.

.6 Field test records.

.7 Inspection certificates.

.8 Manufacturer's certificates.

.2 Store record documents and samples in field office apart from documents used for construction.

.1 Provide files, racks, and secure storage.

.3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.

.1 Label each document "PROJECT RECORD" in neat, large, printed letters.

.4 Maintain record documents in clean, dry and legible condition.

.1 Do not use record documents for construction purposes.

.5 Keep record documents and samples available for inspection by the Consultant.

1.8 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

.1 Record information on set of black line opaque drawings, provided by the Consultant.

.2 Record information concurrently with construction progress.

.1 Do not conceal Work until required information is recorded.

.3 Contract Drawings and shop drawings: mark each item to record actual construction, including:

.1 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

.2 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.

.3 Field changes of dimension and detail.

.4 Changes made by change orders.

.5 Details not on original Contract Drawings.

.6 References to related shop drawings and modifications.

.4 Specifications: mark each item to record actual construction, including:

.1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.

.2 Changes made by Addenda and change orders.

.5 Other Documents: maintain field test records, required by individual specifications sections.

.6 Provide digital photos, if requested, for site records.

1.9 FINAL SURVEY

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

1.10 WARRANTIES AND BONDS

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

.2 Submit warranty management plan, (30) days before planned pre-warranty conference, for the Consultant’s approval.

.3 Warranty management plan to include required actions and documents to assure that the Consultant receives warranties to which it is entitled.

.4 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.

.5 Submit, warranty information made available during construction phase, to the Consultant for approval prior to each monthly pay estimate.

.6 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:

.1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.

.2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

.3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within (10) days after completion of applicable item of work.

.4 Verify that documents are in proper form, contain full information, and are notarized.

.5 Co-execute submittals when required.

.6 Retain warranties and bonds until time specified for submittal.

.7 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.

.8 Nine (9) months after the date of Substantial Completion of the Work, perform a warranty inspection with the Consultant.

.9 Include information contained in warranty management plan as follows:

.1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, subcontractors, manufacturers or suppliers involved.

.2 Provide list for each warranted equipment, item, feature of construction or system indicating:

.1 Name of item.

.2 Model and serial numbers.

.3 Location where installed.

.4 Name and phone numbers of manufacturers or suppliers.

.5 Names, addresses and telephone numbers of sources of spare parts.

.6 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.

.7 Cross-reference to warranty certificates as applicable.

.8 Starting point and duration of warranty period.

.9 Summary of maintenance procedures required to continue warranty in force.

.10 Cross-Reference to specific pertinent Operation and Maintenance manuals.

.11 Organization, names and phone numbers of persons to call for warranty service.

.12 Typical response time and repair time expected for various warranted equipment.

.3 Contractor's plans for attendance at 9 month post-construction warranty inspections.

.4 Procedure and status of tagging of equipment covered by extended warranties.

.5 Post copies of instructions near selected pieces of equipment where operation is critical for warranty and/or safety reasons.

.10 Respond in timely manner to oral or written notification of required construction warranty repair work.

.11 Written verification to follow oral instructions.

.1 Failure to respond will be cause for the Consultant to proceed with action against Contractor.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 01 35 29.06 – Health and Safety Requirements

.2 Section 01 35 43 – Environmental Procedures

.3 Section 01 74 11 – Cleaning

.4 Section 01 74 21 – Construction/Demolition Waste Management and Disposal

1.2 REFERENCES

.1 CSA International

.1 CSA S350-M1980 (R2003), Code of Practice for Safety in Demolition of Structures.

.2 U.S. Environmental Protection Agency (EPA)/Office of Water

.1 EPA 832/R-92-005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Submit demolition drawings:

.1 Submit for review and approval by the Consultant shoring and underpinning drawings stamped and signed by professional engineer registered or licensed in the Province Territory of Québec, Canada, showing proposed method.

.3 Sustainable Design Submittals:

.1 Construction Waste Management:

.1 Submit project Waste Management Plan Waste Reduction Workplan highlighting recycling and salvage requirements.

.2 Submit calculations on end-of-project recycling rates, salvage rates, and landfill rates demonstrating that 50 % of construction wastes were recycled or salvaged.

1.4 SITE CONDITIONS

.1 Protection de l'environnement

.1 Perform works in accordance with section 01 35 43 – Environmental Procedures.

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 EXAMINATION

.1 Locate and protect utilities. Preserve active utilities traversing site in operating condition.

.2 Notify and obtain approval of utility companies before starting demolition.

.3 Disconnect, cap, plug or divert, as required, existing public utilities within the property where they interfere with the execution of the work, in conformity with the requirements of the authorities having jurisdiction. Mark the location of these and previously capped or plugged services on the site and indicate location (horizontal and vertical) on the record drawings. Support, shore up and maintain pipes and conduits encountered.

.1 Immediately notify Consultant and utility company concerned in case of damage to any utility or service, designated to remain in place.

.2 Immediately notify Consultant should uncharted utility or service be encountered, and await instruction in writing regarding remedial action.

3.2 PREPARATION

.1 Temporary Erosion and Sedimentation Control:

.1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to: requirements of authorities having jurisdiction, sediment and erosion control drawings, sediment and erosion control plan specific to site, requirements of authorities having jurisdiction, whichever is more stringent.

.2 Inspect, repair, and maintain erosion and sedimentation control measures during demolition.

.3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal after completion of demolition work.

.2 Protection of In-Place Conditions:

.1 Prevent movement, settlement, or damage to adjacent structures, utilities, and landscaping features and parts of building to remain in place. Provide bracing and shoring required.

.2 Keep noise, dust, and inconvenience to occupants to minimum.

.3 Provide temporary dust screens, covers, railings, supports and other protection as required.

.4 Do Work in accordance with Section 01 35 29.06 - Health and Safety Requirements.

.3 Demolition/Removal:

.1 Remove items as indicated.

.2 Removal of Pavements, Curbs and Gutters:

.1 Square up adjacent surfaces to remain in place by saw cutting or other method approved by the Consultant.

.2 Protect adjacent joints and load transfer devices.

.3 Protect underlying and adjacent granular materials.

3.3 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.

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

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

.3 Refer to demolition drawings and specifications for items to be salvaged for reuse.

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

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

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 03 20 00 - CONCRETE REINFORCING

.2 Section 03 30 00 - CAST-IN-PLACE CONCRETE

.3 Section 03 30 03 – CONCRETE REPAIR

.4 Section 03 37 13 - SHOTCRETE

1.2 REFERENCES

.1 Canadian Standards Association (CSA International)

.1 CSA-A23.1-04/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.

.2 CSA-O86S1-05, Supplement No. 1 to CAN/CSA-O86-01, Engineering Design in Wood.

.3 CSA O121-M1978 (R2003), Douglas Fir Plywood.

.4 CSA O151-04, Canadian Softwood Plywood.

.5 CSA O153-M1980 (R2003), Poplar Plywood.

.6 CAN/CSA-O325.0-92 (R2003), Construction Sheathing.

.7 CSA O437 Series-93 (R2006), Standards for OSB and Waferboard.

.8 CSA S269.1-1975 (R2003), Falsework for Construction Purposes.

.9 CAN/CSA-S269.3-M92 (R2003), Concrete Formwork, National Standard of Canada

.2 Underwriters' Laboratories of Canada (ULC)

.1 CAN/ULC-S701-05, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.

.3 Ministère des Transports du Québec (MTQ)

.1 *Cahier des charges et devis généraux – Infrastructures routières – Construction et réparation* (CCDG)

.2 Ouvrages routiers, Normes, Tome VII – Matériaux, norme 3101, *Béton de masses volumiques normales*.

.3 Ouvrages routiers, Normes, Tome VII – Matériaux, norme 3501, *Matériaux de cure*.

.4 Ouvrages routiers, Normes, Tome VII – Matériaux, norme 3801, *Mortiers cimentaires en sac*.

.5 Ouvrages routiers, Normes, Tome VII – Matériaux, norme 3901, *Coulis cimentaires*.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Submit shop drawings for formwork and falsework.

.1 Submit drawings stamped and signed by professional engineer member of the *Ordre des ingénieurs du Québec*.

.3 Submit required Material Safety Data Sheets (MSDS), in accordance with the Workplace Hazardous Materials Information System (WHMIS) and according to Section 01 35 29.06 – Health and Safety Requirements and Section 01 35 43 – Environmental Procedures.

.4 Shop drawings must indicate method and schedule of construction, shoring, stripping and re-shoring procedures, materials, arrangement of joints, special architectural exposed finishes, ties, liners, and locations of temporary embedded parts. Comply with CSA S269.1, for falsework drawings Comply with CAN/CSA-S269.3 for formwork drawings.

.5 Provide shop drawings including formwork design data: permissible rate of concrete placement, and temperature of concrete, in forms.

.6 Provide sequence of erection and removal of formwork/falsework as directed by the Consultant.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Waste Management and Disposal:

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

.2 Place materials defined as hazardous or toxic in designated containers.

.3 Divert wood materials from landfill to a recycling reuse composting facility as approved by the Consultant.

.4 Divert plastic materials from landfill to a recycling reuse composting facility as approved by the Consultant.

.5 Divert unused form release material from landfill to an official hazardous material collections site as approved by the Consultant.

Part 2 Products

2.1 MATERIALS

.1 Formwork materials:

.1 For concrete without special architectural features, use wood and wood product formwork materials to CSA-O121.

.2 For concrete with special architectural features, use formwork materials to CSA-A23.1/A23.2.

.2 Form ties:

.1 For concrete not designated 'Architectural', use removable or snap-off metal ties, fixed or adjustable length, free of devices leaving holes larger than 25 mm diameter in concrete surface.

.2 For Architectural concrete, use snap ties complete with plastic cones and light grey concrete plugs.

.3 Form liner:

.1 In the case of concrete that does not have any architectural features, use removable or quick-disconnect metal tie rods, fixed or adjustable in length, and having no element that could leave holes with a diameter greater than 25 mm on the concrete surface.

.2 In the case of concrete having architectural features, use tie rods equipped with plastic cones and plugs that are pale gray concrete in colour.

.4 Form release agent: non-toxic, biodegradable, low VOC.

.5 Form stripping agent: colourless mineral oil, non-toxic, biodegradable, low VOC, free of kerosene, with viscosity between 70 and 110s Saybolt Universal 15 to 24 mm^2/s at 40 degrees C, flashpoint minimum 150 degrees C, open cup.

.6 Falsework materials: to CSA-S269.1.

Part 3 Execution

3.1 FABRICATION AND ERECTION

.1 Verify lines, levels and centres before proceeding with formwork/falsework and ensure dimensions agree with drawings.

.2 Obtain Consultant’s approval for use of earth forms framing openings not indicated on drawings.

.3 Hand trim sides and bottoms and remove loose earth from earth forms before placing concrete.

.4 Fabricate and erect falsework in accordance with CSA S269.1.

.5 Do not place shores and mud sills on frozen ground.

.6 Provide site drainage to prevent washout of soil supporting mud sills and shores.

.7 Fabricate and erect formwork in accordance with CAN/CSA-S269.3 to produce finished concrete conforming to shape, dimensions, locations and levels indicated within tolerances required by CSA-A23.1/A23.2.

.8 Align form joints and make watertight.

.1 Keep form joints to minimum.

.9 Unless otherwise specified, use 15 mm chamfer strips for sharp edges and/or rods of 15 mm for the re-entrant corners of formwork joints.

.10 Grooves, slots, openings, drip edges, re-entrants, and expansion and contraction joints must comply with specifications.

.11 Embed anchors, sleeves, and other embedded items required for the works specified in other sections.

.1 Ensure that anchors and embeds do not protrude from surfaces to be coated with a finishing product, a coat of paint for example.

.12 Coat the inside of the formwork with a commercially available form removal agent designed to prevent the adhesion of concrete.

.13 Brush forms before their installation according to the application rate specified in the data sheet of the product to be used. The form removal agent should not come in contact with the reinforcement.

.14 Determine the elevation of the concrete pour by the top of formwork or by molding.

.15 Before pouring the concrete, clean formwork in accordance with CSA standard A23.1/A23.2, latest edition.

.1 For cleaning formwork, use a compressed air jet, a jet of pressurized water, or a vacuum to remove any ice, snow, debris, or other foreign matter.

.2 The air jet must be equipped with a filter that removes oil. Demonstrate the effectiveness of the filter before use.

.3 Use mixing water for concrete in accordance with CSA standard A23.1/A23.2, latest edition, for cleaning formwork.

3.2 REMOVAL AND RESHORING

.1 After pouring the concrete, leave the formwork in place for at least the minimum period as indicated by the CCDG, article15.4.3.1.6.

.2 Remove formwork when concrete has reached 70 % of its design strength or minimum period noted above, whichever comes later, and replace immediately with adequate reshoring.

.3 The formwork shall be considered removed once it has been loosened and a part of it is no longer in contact with the concrete.

.4 Re-use formwork and falsework subject to requirements of CSA-A23.1/A23.2.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 03 10 00 – CONCRETE FORMING AND ACCESSORIES

.2 Section 03 30 00 - CAST-IN-PLACE CONCRETE

.3 Section 03 30 03 – CONCRETE REPAIR

.4 Section 03 37 13 - SHOTCRETE

1.2 PRICE AND PAYMENT PROCEDURES

.1 Measurement and Payment:

.1 Measure reinforcing steel in kilograms of steel incorporated into Work, computed from theoretical unit mass specified in CSA-G30.18 for lengths and sizes of bars as indicated or authorized in writing by the Consultant.

1.3 REFERENCES

.1 American Concrete Institute (ACI)

.1 SP-66, ACI Detailing Manual 2004.

.2 ASTM International

.1 ASTM A82/A82M, last edition, Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.

.2 ASTM A143/A143M, last edition, Standard Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement.

.3 ASTM A185/A185M, last, Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.

.4 ASTM A775/A775M, last edition, Standard Specification for Epoxy-Coated Reinforcing Steel Bars.

.3 CSA International

.1 CSA-A23.1-04/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.

.2 CAN/CSA-A23.3, Design of Concrete Structures, latest edition.

.3 CSA-G30.18, Carbon Steel Bars for Concrete Reinforcement, latest edition.

.4 CSA-G40.20-13/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel, latest edition.

.5 CAN/CSA-G164-M92, Hot Dip Galvanizing of Irregularly Shaped Articles Metals and Metal Products, latest edition.

.6 CSA W186-M1990, Welding of Reinforcing Bars in Reinforced Concrete Construction, latest edition.

.4 Reinforcing Steel Institute of Canada (RSIC)

.1 RSIC-2004, Reinforcing Steel Manual of Standard Practice.

.5 Ministère des Transports du Québec (MTQ)

.1 *Cahier des charges et devis généraux – Infrastructures routières – Construction et réparation* (CCDG), latest edition.

.2 Ouvrages routiers, Normes, Tome VII – Matériaux, norme 5101, *Armatures pour les ouvrages de béton*, latest edition.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Prepare reinforcement drawings in accordance with RSIC Manual of Standard Practice SP-66.

.3 Shop Drawings:

.1 Submit drawings stamped and signed by professional engineer, member in good standing with the *Ordre des ingénieurs du Québec* (OIQ).

.1 Indicate placing of reinforcement and:

.1 Bar bending details.

.2 Lists.

.3 Quantities of reinforcement.

.4 Sizes, spacings, locations of reinforcement and mechanical splices if approved by the Consultant, with identifying code marks to permit correct placement without reference to structural drawings.

.5 Indicate sizes, spacings and locations of chairs, spacers and hangers.

.2 Detail lap lengths and bar development lengths to CAN/CSA-A23.3, unless otherwise indicated.

.4 When Chromate solution is used as replacement for galvanizing non-prestressed reinforcement, provide product description for review by Surveillant des Travaux prior to its use.

1.5 QUALITY ASSURANCE

.1 Quality assurance:

.1 Mill Test Report: upon request, provide Consultant with certified copy of mill test report of reinforcing steel, a minimum of four (4) weeks prior to beginning reinforcing work.

.2 Upon request submit in writing to Consultant proposed source of reinforcement material to be supplied.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:

.1 Store materials off ground, indoors, in a dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Replace defective or damaged materials with new.

.4 Develop Construction Waste Management Plan Waste Reduction Work Plan related to Work of this Section.

Part 2 Products

2.1 MATERIALS

.1 Ensure the reinforcing steel is free of dirt, earth, rust, oil, and hardened concrete spatter from a previous concrete pour.

.2 Ensure that the reinforcing steel bars to be used are not bent or twisted.

.3 Any replacement of reinforcing steel by different sized bars must be authorized in writing by the Consultant.

.4 Reinforcing steel: billet steel, grade 400W, deformed bars to CSA-G30.18, unless otherwise indicated.

.5 Reinforcing steel: weldable low alloy steel deformed bars to CSA-G30.18.

.6 Cold-drawn annealed steel wire ties: to ASTM standard A82/A82M.

.7 Deformed steel wire for concrete reinforcement: to ASTM A82/A82M.

.8 Welded steel wire fabric: to ASTM A185/A185M.

.1 Provide in flat sheets only.

.9 Welded deformed steel wire fabric: to ASTM A82/A82M.

.1 Provide in flat sheets only.

.10 Galvanizing of non-prestressed reinforcement: minimum galvanization of 87 µm according to CAN/CSA-G164, latest edition, *Hot Dip Galvanizing of Irregularly Shaped Articles*.

.11 Mechanical splices: subject to approval of the Consultant.

.12 Plain round bars: to CSA-G40.20/G40.21.

2.2 FABRICATION

.1 Fabricate reinforcing steel in accordance with CSA-A23.1/A23.2 and with the *Reinforcing Steel Manual of Standard Practice* by the Reinforcing Steel Institute of Canada (RSIC).

.2 Obtain Consultant's written approval for locations of reinforcement splices other than those shown on placing drawings.

.3 Upon approval of Consultant, weld reinforcement in accordance with CSA W186.

.4 Ship bundles of bar reinforcement, clearly identified in accordance with bar bending details and lists.

.5 Apply tolerances for length and bending of reinforcing steel as specified in Figure 6.1 of the RSIC *Reinforcing Steel Manual of Standard Practice*.

.6 Unless otherwise indicated on the drawings and specifications, apply a minimum length of 600 mm overlap between interconnecting bars following work carried out in several distinct phases.

2.3 SOURCE QUALITY CONTROL

.1 Upon request, provide Consultant with certified copy of mill test report of reinforcing steel, showing physical and chemical analysis, minimum two (2) weeks prior to beginning reinforcing work.

.2 Upon request, inform Consultant of proposed source of material to be supplied.

Part 3 Execution

3.1 PREPARATION

.1 Galvanizing to include chromate treatment.

.1 Duration of treatment to be 1 hour per 25 mm of bar diameter.

.2 Conduct bending tests to verify galvanized bar fragility in accordance with ASTM A143/A143M.

3.2 FIELD BENDING

.1 Do not field bend or field weld reinforcement except where indicated or authorized by the Consultant.

.2 When field bending is authorized, bend without heat, applying slow and steady pressure.

.1 Bending: cold bending by machine.

.3 Replace bars, which develop cracks or splits.

3.3 PLACING REINFORCEMENT

.1 Place reinforcing steel as indicated on placing drawings in accordance with CSA-A23.1/A23.2.

.2 Prior to placing concrete, obtain Consultant's approval of reinforcing material and placement.

.3 Ensure cover to reinforcement is maintained during concrete pour.

.4 Secure reinforcing steel using steel wire ties to prevent movement during the pouring of concrete:

.1 Attach firmly the reinforcing steel at intersections if these intersections are 300 mm or more away or at every two (2) intersections if distance is lesser.

.2 In the case of repair works, the reinforcing steel bars are fixed to the formwork ties.

.3 To link the reinforcing steel, use annealed steel wire with a diameter of at least 1.6 mm (16 gauge).

.4 For galvanized steel reinforcement, use galvanized steel wire.

.5 Fold wires to obtain the same cover as required for reinforcement.

.5 Replace existing reinforcing steel whose ties have been altered during the demolition works in their original position.

.1 Attach the reinforcement to each formwork tie in order to meet the required concrete cover and a minimum distance of 25 mm between the reinforcing steel and the concrete to be conserved.

.6 Use plastic spacers spaced at a maximum distance of 1,200 mm from center to center, to maintain the reinforcing steel at the required distance from the forms, the ground, or the existing concrete:

.1 Use circular plastic spacers whose center is fixed to the reinforcing steel for holding in position the reinforcing steel grids comprising 15 M and 20 M bars.

.2 Use plastic spacers to maintain upright the reinforcing steel grids comprising bars sized 25 M or larger.

.3 Use continuous wedges with plastic coated wire and coated plastic tabs to keep horizontal the reinforcing steel grid which is closest to the formwork, the ground, or the existing concrete.

.4 Unless otherwise indicated in the drawings and specifications, use individual plastic spacers for the horizontal reinforcing steel.

.7 During repair works, at the request of the Consultant, add reinforcement if the existing reinforcing steel bars have been thinned by corrosion enough to reduce the structural capacity of the structure.

.1 Install this additional reinforcement to obtain a minimum overlap of 600 mm.

.2 If required, demolish concrete to respect this requirement.

.3 Prior to placing concrete, obtain Consultant's approval of reinforcing material and placement.

.4 Ensure that the integrity of the reinforcement coating is preserved during concrete pouring.

.5 During transport and handling, cover the galvanized bars to protect them adequately.

3.4 FIELD TOUCH-UP

.1 Touch up damaged and cut ends of epoxy coated or galvanized reinforcing steel with compatible finish to provide continuous coating.

3.5 CLEANING

.1 Progress Cleaning: clean in accordance with Section01 74 11 - Cleaning.

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

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

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

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 03 10 00 - CONCRETE FORMING AND ACCESSORIES

.2 Section 03 20 00 - CONCRETE REINFORCING

.3 Section 03 30 03 – CONCRETE REPAIR

.4 Section 03 37 13 - SHOTCRETE

1.2 REFERENCES

.1 Abbreviations and Acronyms:

.1 Portland Cement : hydraulic cement, blended hydraulic cement (b suffix - b denotes blended) and Portland-limestone cement.

.1 Type GU, GUb and GUL - General use cement.

.2 Type MS and MSb - Moderate sulphate-resistant cement.

.3 Type MH, MHb and MHL - Moderate heat of hydration cement.

.4 Type HE, HEb and HEL - High early-strength cement.

.5 Type LH, LHb and LHL - Low heat of hydration cement.

.6 Type HS and HSb - High sulphate-resistant cement.

.2 Fly ash:

.1 Type F - with CaO content less than 15 %.

.2 Type CI - with CaO content ranging from 15 to 20 %.

.3 Type CH - with CaO greater than 20 %.

.3 GGBFS - Ground, granulated blast-furnace slag.

.2 Reference Standards:

.1 ASTM International

.1 ASTM C260/C260M-10a, Standard Specification for Air-Entraining Admixtures for Concrete.

.2 ASTM C309-11, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.

.3 ASTM C494/C494M-13, Standard Specification for Chemical Admixtures for Concrete.

.4 ASTM C1017/C1017M-07, Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.

.5 ASTM D412-06a (2013), Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension.

.6 ASTM D624-00 (2007), Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomer.

.7 ASTM D1751-04 (2008), Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).

.8 ASTM D1752-04a (2008), Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction.

.2 CSA International

.1 CSA A23.1/A23.2-09, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.

.2 CSA A283-06 (R2011), Qualification Code for Concrete Testing Laboratories.

.3 CSA A3000-08, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).

1.3 ADMINISTRATIVE REQUIREMENTS

.1 Pre-installation Meetings: in accordance with Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart, convene pre-installation meeting one week prior to beginning concrete works.

.1 The Consultant and a representative of the testing laboratory must be present.

.2 Verify project requirements.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Provide testing inspection results reports for review by the Consultant and do not proceed without written approval when deviations from mix design or parameters are found.

.3 Concrete pours: provide accurate records of poured concrete items indicating date and location of pour, quality, air temperature and test samples taken as described in PART 3 - FIELD QUALITY CONTROL.

.4 Concrete hauling time : provide for review by Departmental Representative DCC Representative Consultant deviations exceeding maximum allowable time of 120 minutes for concrete to be delivered to site of Work and discharged after batching.

1.5 QUALITY ASSURANCE

.1 Quality Assurance : in accordance with Section 01 45 00 - Quality Control.

.2 Provide the Consultant, minimum 2 weeks prior to starting concrete work, with valid and recognized certificate from plant delivering concrete.

.1 Provide test data and certification by qualified independent inspection and testing laboratory that materials and mix designs used in concrete mixture will meet specified requirements.

.3 Minimum 2 weeks prior to starting concrete work, provide proposed quality control procedures for review by Departmental Representative DCC Representative Consultant on following items:

.1 Falsework erection.
.2 Hot weather concrete.
.3 Cold weather concrete.
.4 Curing.
.5 Finishes.
.6 Formwork removal.
.7 Joints.

.4 Quality Control Plan: provide written report to the Consultant verifying compliance that concrete in place meets performance requirements of concrete as established in PART 2 - PRODUCTS.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Delivery and Acceptance Requirements :

.1 Concrete hauling time: deliver to site of Work and discharged within 120 minutes maximum after batching.

.1 Do not modify maximum time limit without receipt of prior written agreement from the Consultant and concrete producer as described in CSA A23.1/A23.2.

.2 Deviations to be submitted for review by the Consultant.

.2 Concrete delivery: ensure continuous concrete delivery from plant meets CSA A23.1/A23.2.

.2 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, packaging materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

1.7 SITE CONDITIONS

.1 Place concrete while complying with the temperature limits in CAN/CSA-A23.l/A23.2.

.2 Do not place concrete:

.1 When the air temperature is above 22 °C.
.2 In the presence of rain or excessive wind or dust.
.3 If the conditions, in the opinion of the Consultant, seem harmful to concrete.

.3 Comply with cold weather requirements when the air temperature drops below 5 °C.

Part 2 Products

2.1 DESIGN CRITERIA

.1 Alternative 1 - Performance : to CSA A23.1/A23.2, and as described in MIXES of PART 2 - PRODUCTS.

2.2 PERFORMANCE CRITERIA

.1 Quality Control Plan : ensure concrete supplier meets performance criteria of concrete as established by the Consultant and provide verification of compliance as described in PART 1 - QUALITY ASSURANCE.

2.3 MATERIALS

.1 Portland Cement : to CSA A3001, Type GU.

.2 Blended hydraulic cement : Type GUb to CSA A3001.

.3 Portland-limestone cement : Type GUL to CSA A23.1.

.4 Supplementary cementing materials : selon la norme CAN/CSA A3001 et selon les exigences suivantes :

- .1 Remplacement minimal de 15 % de cendres volantes selon la masse des matériaux cimentaires au total.
- .2 Minimum de 5 % de fumées de silice.
- .3 Remplacement maximal de 30 % selon la masse des matériaux cimentaires au total.

.5 Water : to CSA A23.1.

.6 Aggregates : to CSA A23.1/A23.2.

.7 Admixtures :

- .1 Air entraining admixture: to ASTM C260.
- .2 Chemical admixture : to ASTM C494. Consultant to approve accelerating or set retarding admixtures during cold and hot weather placing.

.8 Shrinkage compensating grout: premixed compound consisting of metallic non-metallic aggregate, Portland cement, water reducing and plasticizing agents to CSA A23.1/A23.2.

- .1 Compressive strength : 35 MPa at 28 days.
- .2 Net shrinkage at 28 days : maximum 0.08 %.

.9 Non premixed dry pack grout: composition of non metallic aggregate Portland cement with sufficient water for mixture to retain its shape when made into ball by hand and capable of developing compressive strength of 35 MPa at 28 days.

.10 Post-Tensioning Ducts: to CSA A23.1/A23.2.

.11 Premoulded joint fillers :

- .1 Bituminous impregnated fiber board: to ASTM D1751.

.12 Weep hole tubes: galvanized steel plastic.

.13 Polyethylene film: 0.15 mm thickness to CAN/CGSB-51.34.

2.4 MIXES

.1 Alternative 1 - Performance Method for specifying concrete performance criteria to CSA A23.1/A23.2.

.1 Ensure concrete supplier meets performance criteria as established below and provide verification of compliance as in Quality Control Plan.

.2 Provide concrete mix to meet following plastic state requirements:

.1 Workability : free of surface blemishes loss of mortar colour variations segregation.

.3 Provide concrete mix to meet following hard state requirements :

.1 Durability and class of exposure : C-1.

.2 Compressive strength at 28 age : 35 MPa minimum.

.3 Intended application: repair work and barriers.

.4 Aggregate size : 22 mm maximum.

.5 Pre-Qualification : air-entraining agent, slump, and temperature results based on the previous use of the proposed mixture.

.4 Provide quality management plan to ensure verification of concrete quality to specified performance.

.5 Certification du fournisseur de béton : la centrale de malaxage et les matériaux doivent satisfaire aux exigences de la norme CAN/CSA A23.1.

Part 3 Execution

3.1 PREPARATION

.1 Obtain Consultant's written approval before placing concrete.

.1 Provide 24 hours minimum notice prior to placing of concrete.

.2 Place concrete reinforcing in accordance with Section 03 20 00 - Concrete Reinforcing.

.3 During concreting operations :

.1 Development of cold joints not allowed.

.2 Ensure concrete delivery and handling facilitates placing with minimum of re-handling, and without damage to existing structure or Work.

.4 Pumping of concrete will not be permitted is permitted only after approval of equipment and mix.

.5 Ensure reinforcement and inserts are not disturbed during concrete placement.

.6 Prior to placing of concrete obtain Consultant approval of proposed method for protection of concrete during placing and curing in adverse weather.

.7 Protect previous Work from staining.

.8 Clean and remove stains prior to application for concrete finishes.

.9 Maintain accurate records of poured concrete items to indicate date, location of pour, quality, air temperature and test samples taken.

.10 In locations where new concrete is dowelled to existing work, drill holes in existing concrete.

.1 Place steel dowels of deformed steel reinforcing bars and pack solidly with shrinkage compensating grout epoxy grout to anchor and hold dowels in positions as indicated.

.11 Do not place load upon new concrete until authorized by Consultant.

.12 Immediately before placing concrete, properly water the substrate with clean water.

3.2 INSTALLATION/APPLICATION

.1 Do cast-in-place concrete work to CSA A23.1/A23.2.

.2 Sleeves and inserts :

.1 Do not permit penetrations, sleeves, ducts, pipes or other openings to pass through joists, beams, column capitals or columns, except where indicated or approved by the Consultant.

.2 Where approved by the Consultant, set sleeves, ties, pipe hangers and other inserts and openings as indicated or specified elsewhere.

.3 Sleeves and openings greater than 100 x 100 mm not indicated must be reviewed by the Consultant.

.4 Do not eliminate or displace reinforcement to accommodate hardware. If inserts cannot be located as specified, obtain written approval of modifications from the Consultant before placing of concrete.

.5 Confirm locations and sizes of sleeves and openings shown on drawings.

.6 Set special inserts for strength testing as indicated and as required by non-destructive method of testing concrete.

.3 Anchor bolts :

.1 Set anchor bolts to templates in co-ordination with appropriate trade prior to placing concrete.

.2 Grout anchor bolts in preformed holes or holes drilled after concrete has set only after receipt of written approval from the Consultant.

.1 Formed holes : 100 mm minimum diameter.

.2 The diameter of the drilled holes after the concrete has set must comply with the manufacturer’s recommendations.

.3 Protect anchor bolt holes from water accumulations, snow and ice build-ups.

.4 Set bolts and fill holes with shrinkage compensating grout epoxy grout.

.5 Locate anchor bolts used in connection with expansion shoes, rollers and rockers with due regard to ambient temperature at time of erection.

.4 Drainage holes and weep holes :

.1 Form weep holes and drainage holes in accordance with Section 03 10 00 - Concrete Forming and Accessories. If wood forms are used, remove them after concrete has set.

.2 Install weep hole tubes and drains as indicated.

.5 Finishing and curing :

.1 Finish concrete to CSA A23.1/A23.2.

.2 Use procedures as reviewed by the Consultant to remove excess bleed water. Ensure surface is not damaged.

.3 Finishing:

.1 Sidewalks: broom finish.

.2 Repairs to soffits, abutments, and retaining walls : rough finish.

.3 Approach slabs: rough finish.

.4 Elsewhere: smooth finish.

.6 Joint fillers:

.1 Furnish filler for each joint in single piece for depth and width required for joint, unless otherwise authorized by the Consultant.

.2 When more than one piece is required for joint, fasten abutting ends and hold securely to shape by stapling or other positive fastening.

.3 Locate and form isolation construction expansion joints as indicated.

.4 Install joint filler.

3.3 SURFACE TOLERANCE

.1 S'assurer que les surfaces soient lisses, continues et uniformes.

3.4 PROTECTION

.1 Protection and curing of placed concrete must be done in accordance with the following requirements in addition to the requirements of the cold weather CAN/CSA-A23.1/A23.2 standard.

.1 Protect the concrete with a windproof shelter such as a tarpaulin or other material to allow free circulation of air around the inside of freshly poured concrete.

.2 Do not allow contact between the shelters and the walls of the formwork.

.3 Provide sufficient space for removal of formwork for finishing.

.4 Use heating equipment approved by the Consultant.

.5 Ventilation products of the protective shelters : The equipment must be able to keep the inside air warm enough to main the following concrete cure temperatures constant :

.1 For the first three days : minimum temperature of 15 °C, maximum of 27 °C on concrete surfaces.

.2 For concrete abutments, solid piers, and bases: curing at 10 °C for an additional four (4) days.

.3 For superstructures: maintain concrete at a minimum of 10 °C for an additional fourteen (14) days.

.6 Keep concrete surfaces continuously wet and protected.

.7 Provide misting equipment to allow curing with spray mist before the start of the bridge deck installation.

.2 Surfaces without formwork : curing with burlap and water.

.1 Place two layers of wet burlap on the concrete surface.

.2 Overlap each strip a minimum of 75 mm and secure against movement by the wind.

.3 Keep burlap in place and keep moist for seven (7) days after placement.

.3 Surfaces with formwork :

.1 No additional curing is required if the formwork is left in place for seven (7) days or more.

.2 If the formwork is removed within seven (7) days, cure concrete as indicated for surfaces without formwork for the rest of the seven-day period.

.4 During the curing period, only uncover those areas necessary for the finishing treatment. Cover and continue to cure.

3.5 FIELD QUALITY CONTROL

.1 Site tests : conduct tests as follows in accordance with Section 01 45 00 - Quality Control and submit report as described in PART 1 - ACTION AND INFORMATIONAL SUBMITTALS.

.1 Concrete pours.

.2 Slump.

.3 Air content.

.4 Compressive strength at 7 and 28 days.

.5 Air and concrete temperature.

.2 Inspection and testing of concrete and concrete materials will be carried out by testing laboratory designated by the Consultant for review to CSA A23.1/A23.2.

.1 Ensure testing laboratory is certified to CSA A283.

.3 Ensure test results are distributed for discussion at pre-pouring concrete meeting between testing laboratory and the Consultant.

.4 The testing laboratory will take additional test cylinders during cold weather concreting. Cure cylinders on job site under same conditions as concrete which they represent.

.5 Non-Destructive Methods for Testing Concrete: to CSA A23.1/A23.2.

3.6 CLEANING

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

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

.1 Prepare a Waste Reduction Workplan (WRW) according to Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

.2 Divert unused concrete materials from landfill to local quarry facility after receipt of written approval from the Consultant.

.3 Provide appropriate area on job site where concrete trucks and be safely washed.

.4 Divert unused admixtures and additive materials (pigments, fibres) from landfill to official hazardous material collections site as approved by the Consultant.

.5 Do not dispose of unused admixtures and additive materials into sewer systems, into lakes, streams, onto ground or in other location where it will pose health or environmental hazard.

.6 Prevent admixtures and additive materials from entering drinking water supplies or streams.

.7 Using appropriate safety precautions, collect liquid or solidify liquid with inert, noncombustible material and remove for disposal.

.8 Dispose of waste in accordance with applicable local, Provincial/Territorial and National regulations.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 02 41 99 – Demolition for Minor Works

.2 Section 03 10 00 – Concrete Forming and Accessories

.3 Section 03 20 00 – Concrete Reinforcing

.4 Section 03 30 00 – Cast-in-place Concrete

1.2 REFERENCES

.1 Unless otherwise indicated, execute all concrete repair works in accordance with the requirements of the following standards:

.1 CSA International:

.1 CSA A23.1/A23.2-09, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.

.2 CAN/CSA-269.1-1975 (R1998), Falsework for Construction Purposes.

.3 CAN/CSA-S269.3-M92 (R2013), Concrete Formwork.

.4 CAN/CSA-G30.18-09, Carbon Steel Bars for Concrete Reinforcement.

.5 CAN/CSA G30.3-M1983 (R1998), Cold-Drawn Steel Wire for Concrete Reinforcement.

.6 CAN/CSA-G30.5-M1983 (R1998), Welded Steel Wire Fabric for Concrete Reinforcement.

.7 CSA A3000-08, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).

.2 American Concrete Institute:

.1 ACI 304.2R-96, Placing Concrete by Pumping Methods.

.2 ACI 546.1.R-80, Guide to Repair of Concrete Bridge Superstructures.

.3 ASTM International

.1 ASTM E488/E488M-10, Standard Test Methods for Strength of Anchors in Concrete Elements.

.4 Ministère des Transports du Québec :

.1 Liste des matériaux relatifs au béton éprouvés par le laboratoire des chaussées, 2012.

.2 Cahier des charges et devis généraux, Infrastructures routières, Construction et réparation, Édition 2013, Gouvernement du Québec.

.3 Normes Ouvrages routiers, Tome VII, Matériaux, Gouvernement du Québec.

1.3 UNIT PRICES

.1 The repairs will be paid based on actual quantities measured on site and unit prices indicated in the Tender Form and acceptance:

.1 Concrete repairs will be paid per square meter. The unit price includes demolition and surface preparation, adding reinforcement, when required, the supply and placing of concrete, formwork, curing, sandblasting, and correction of faulty repairs.

.2 Crack injection will be paid per linear meter or square meter of the surface area of cracks to be injected as specified in the Tender Form, measured from the first injection port to the last injection port. The unit price includes the provision of a work plan for the injection of the cracks, products and equipment, cleaning and preparation of the surfaces, the installation and removal of the sealing products, and testing.

1.4 DOCUMENTS/SAMPLES REQUIRED

.1 Submit the documents and samples required under section 01 33 00, *Documents and Samples*, to the Consultant no later than ten (10) days prior to the commencement of work.

.2 Provide a work plan for the injection of the cracks, including a detailed description of the products and the proposed injection method. Include technical data sheets of the products and materials, the make and model number of the pressure gauge, including a certificate of calibration dated no more than 12 months prior to the date of the repair works.

1.5 QUALITY ASSURANCE

.1 Quality Assurance: in accordance with section 01 45 00 – Quality Control.

.2 Chemical Anchors:

.1 Before beginning the installation of chemical anchoring, install three (3) dowels for chemical anchors in areas designated by the Consultant.

.2 Perform pull tests on the dowels in accordance with ASTM E488 in the presence of the Consultant.

.3 If the pullout capacity of the dowels is less than the elastic limit shown on the plans, modify the anchoring method and redo the dowel pull tests on new dowels.

.4 Repair all concrete surfaces damaged during the pull tests.

1.6 SITE CONDITIONS

.1 The site in the working area will not be dry. Ensure suitable dryness for the demolition works, for the placement of repair materials, for hardening, and for crack injection by means such as cofferdams, sandbags, and pumps. Keep the equipment ready in case the weather might cause a rapid increase in water infiltration.

.2 Crack injection should not be performed when the concrete temperature is lower than 15 °C or above 30 °C.

Part 2 Products

2.1 MATERIALS AND EQUIPMENT

.1 Portland cement: to CAN/CSA-A3000 standard, GU type.

.2 Water: to CSA-A23.1.

.3 Aggregates: to CSA-A23.1/A23.2.

.4 Dry Unmixed Grout: product containing Portland cement with nonmetallic aggregate and sufficient water to be able to hold its shape when made into a ball with one's hands, and able to reach a compressive strength of 35 MPa in 28 days.

.5 Binding Agent (adhesive):

.1 Binding agent (adhesive) on the surface of existing concrete before pouring: slurry composed of latex, cement, and water mixed in the following proportions:

.1 3 kg of cement, GU type

.2 7.5 liters of latex

.3 About 2.5 liters of water to obtain a creamy consistency.

.6 Crack Injection Product:

.1 Cracks in soffits: epoxy.

.2 Cracks elsewhere: polyurethane.

.3 Included in the list of patching materials meeting the "A Laboratory Evaluation of Concrete Patching Materials" standard.

.4 The injection product must be less than 12 months old.

.5 Deliver injection products in the original packaging with the date of manufacture.

.7 Chemical Anchors:

.1 Use a two component injectable adhesive for installation of all reinforcing dowels in the existing concrete.

.2 Minimum compressive strength: 50 MPa.

.3 Included in the "Dowel Adhesives" list of the "Designated Sources for Materials" document published by the Ministry of Transportation of Ontario and available on "The Road Authority" website.

Part 3 Execution

3.1 GENERALITIES

.1 Before commencing work, the Consultant will determine and delineate, in the presence of the Contractor, the concrete to be demolished.

.2 Provide the Consultant with all necessary safety equipment to allow him/her to identify the areas to be demolished and to inspect the affected surfaces.

3.2 CONCRETE DEMOLITION

.1 Take all necessary precautions not to damage the parts of the concrete to be preserved during the demolition works. To this end, use pneumatic demolition hammers permitted by article 2.2.1.

.2 Before beginning work, provide the Consultant with the technical data sheet of the proposed equipment and of the proposed safeguards.

.3 Before starting the demolition, execute a saw cut of approximately 20 mm in depth to delimit the work zone for any category of demolition. Take all necessary precautions to ensure that the saw used to make the cut demarcating the demolition area does not touch the reinforcing steel.

.4 If due to carelessness, the reinforcement to be preserved is damaged and cannot be reused, the Contractor must replace the reinforcement at his expense.

.5 Clean demolished surfaces with a pressurized water jet. This cleaning must remove the small pieces of concrete that are not fully adhered to the surface and provide a rough surface for better adhesion to new concrete.

.6 After the final cleaning of the pressure washed surfaces, the Consultant must examine the state of the remaining concrete to ensure that there are no loose particles.

3.3 SURFACE PREPARATION

.1 The exposed surfaces shall be clean and free from loose and friable particles.

.2 The Consultant shall approve the exposed surfaces before the beginning of the pouring of concrete.

.3 Keep the surfaces wet for a period of at least 8 hours before the pouring of the concrete and remove all accumulations of water. Surfaces must be superficially dry before the pour.

3.4 BONDING AGENT APPLICATION

.1 On the areas demanded by the Consultant, the bond between the old and the new concrete must be improved by the application of the described bonding agent. If the bonding agent is dry at the moment of the pour, the surface must be cleaned again with a water jet and a new coat of bonding agent must be applied.

3.5 CONCRETE FABRICATION

.1 Supply this ready mixed concrete, plant fabricated, delivered, and discharged on site as required by section 18 of the CSA A23.1.

.2 For each load of concrete, the concrete supplier must provide the Consultant with a copy of the delivery slip. The following information will appear on the slip:

.1 Company name and address of the supplier
.2 Truck number
.3 Name of the Contractor
.4 Name and location of project
.5 Concrete class
.6 Cumulative quantity
.7 Unloading start time
.8 Unloading end time
.9 Maximum size of aggregate
.10 Required air content
.11 Types of additives used

.12 Amount and type of cement

.13 Amount of water.

.3 Comply with indications of section 20 of CSA-A23.1-M90 standard regarding construction joints. Execute shear keys on the entire length of any construction joint. Those keys shall have a width equal to one-third of the section thickness and a depth equal to one-sixth of that thickness, to a maximum of 100 mm. Slightly bevel sides of shear keys.

3.6 FINISHING OF FORMED SURFACES

.1 Protect and cure concrete in accordance with Article 21 of the CAN/CSA A23.1. In cold weather, protect concrete. The use of the curing products is prohibited.

.2 Concrete surfaces without formwork:

.1 Unless otherwise noted, finish unformed concrete surfaces in accordance with Article 22 of the CAN / CSA A23.1.

.3 Finishing of surfaces with formwork:

.1 Finish surfaces with formwork in accordance with Section 24 of the CAN/CSA-A23.1.

.2 Fill holes left by formwork ties with a non-shrink grout. Only fill the hole without staining the surrounding surface.

3.7 NEW CONCRETE REPAIR

.1 All damaged or defective concrete shall be removed and replaced by concrete that complies with prescriptions of the plans and specifications and according to the Consultant's instructions.

.2 After the removal of forms, the Consultant will examine air pockets, honey combs, and other defects. The Contractor shall submit for the Consultant's approval the repair methods for air pockets, honey combs, and other defects, if any. The Contractor shall not proceed with any surface correction before the Consultant's approval.

3.8 CRACK INJECTION

.1 Patch cracks in the concrete by pressurized injection.

.2 Inject the entire length of cracks having opening greater than or equal to 0.8 mm or as indicated by the Consultant.

.3 Perform injection of cracks in accordance with the crack injection work plan.

.4 Provide written notice to the Consultant:

.1 At least 24 hours prior to the injection of cracks.

.2 At least 24 hours before the resumption of crack injection if the injection was suspended for at least 24 hours.

.5 Clean surfaces adjacent to cracks with a wire brush to free them of dirt, oil, efflorescence, and other foreign matter.

.6 Patch cracks by injecting the product into the injection ports.

.7 Injection Ports:

.1 Set perpendicular to the face of concrete, without drilling into concrete.

.2 Separate injection ports by a distance which is not greater than the thickness of the element, and where the crack is clean and widest.

.3 Spacing of the first and last injection ports should be half of the regular spacing.

.4 Use at least two injection ports per crack.

.5 Cover cracks between the injection port with the sealant with a width of at least 50 mm.

.6 Test sealing of the injection ports and cracks by injection of compressed air at 500 kPa. If the air pressure falls within one minute after the injection, replace the defective piece and repeat the test until the pressure is maintained. Use an air injection equipment with a filter to trap the oil.

.8 The engineer responsible for the preparation of the crack injection work plan must be present for the injection of the first crack to ensure that work is progressing according to the crack injection work plan.

.9 Inject the remaining cracks only when it is demonstrated to the satisfaction of the Consultant that the first crack is properly injected.

.10 Inject vertical or inclined cracks starting from the lowest injection port. Inject horizontal cracks from one end.

.11 Ensure that the injection nozzle pressure is less than 345 kPa.

.12 Injection process:

.1 Inject the crack continuously.

.2 Inject the first injection port until the injection product no longer flows and the maximum pressure is maintained for at least ten minutes.

.3 Close injection ports when the injection product begins to leak.

.4 After at least ten minutes at constant pressure and zero flow to the first injection port, proceed to the injection port furthest from where the injection product has leaked.

.5 Repeat the process until the injection product has filled all injection ports.

.13 Stop injection and clean all equipment and accessories if the injection ceases for more than 75% of the duration of its usage.

.14 If microcracks appear near a crack during injection, immediately stop the injection.

.15 Stop injection and correct sealing of the cracks immediately if the product begins to leak from the crack at any place other than an injection port.

.16 Once the injection product has sufficiently hardened, remove sealant injection ports and any leakage or splashing of the injection product from the surface of the existing concrete, but not less than 24 hours after the end of the injection.

3.9 CHEMCIAL ANCHORS

.1 Drill holes to depths required by the manufacturer of the chemical anchoring adhesive for the elastic limit set out plans for a concrete of 31 MPa.

.2 Minimum depth of holes: 200 mm.

.3 Drill holes on vertical surfaces inclined at 15 ° to the horizontal, below the orifice.

.4 Brush holes to a clean state and blow using a compressed air jet just before the injection of the chemical anchoring adhesive. Insert the air jet hose into the hole.

.5 Inject the chemical anchoring adhesive in the hole. Inject an amount sufficient to completely fill the space between the dowel and the hole over the entire length of the hole.

.6 Insert a clean dowel free of any grease into the bottom of the hole.

.7 Prevent disturbance of the dowel during the curing period.

3.10 WINTER CONDITIONS

.1 Some concrete works in Appendix 1 (Volume VII, Chapter 3), can be executed in cold weather and may require heating, hoarding, or insulation.

.2 The temperature of the plastic concrete at the time of concrete pouring must comply with the requirements of standard 3101 of the Ministry of Transport of Quebec, presented in Appendix 1, *Bétons de masse volumique normale*.

.3 The heating of the shelter must meet the guidelines in this section and the requirements of CSA A23.1/A23.2, *Concrete materials and methods of concrete construction/Test methods and standard practices for concrete*, with respect to the temperatures of materials adjacent to repairs during concreting, the concrete components, and the temperature during the curing of concrete.

.4 Maintain a minimum temperature of 10 °C for a minimum period of seven (7) consecutive days after pouring.

.1 Extend the period of concrete protection as long as the concrete has not reached 70% of the compressive strength required at twenty-eight (28) days.

.5 After the period of protection, gradually lower the temperature of the concrete during the first twenty-four (24) hours.

.1 The rate of temperature decrease should not exceed 10 °C/hour.

.2 Do not put the concrete in contact with the outside air if the temperature difference of the concrete and the outside air is greater than 20 °C.

.6 The requirements for concrete curing apply regardless of the type of protection in place.

.7 All concrete that freezes is not paid and is refused. The part of the structure built with this concrete is considered defective and must be rebuilt according to the plans and specifications at the Contractor's expense.

.8 Existing concrete, reinforcement, and formwork:

.1 The use of sodium chloride or calcium chloride as a de-icing agent is prohibited.

.2 In the case of concrete pouring in the open, all surfaces (existing concrete, reinforcements, formwork, etc.) with which the plastic concrete comes into contact must be heated to a minimum temperature of 0 °C beforehand.

.9 In the case of pouring concrete under a hoarding or shelter, heat to maintain a temperature between 0 and 20 °C on the contact surfaces for a period of at least 24 hours prior to pouring.

.10 Keep formwork in place for the duration of the protection period and the surfaces with formwork at a temperature between 0 and 20 °C throughout the duration of the protection.

.11 Types of protection

.1 Insulation

.1 Use insulating material to cover the surface of the plastic concrete.

.1 Each layer of insulating material shall be of waterproof cover type, made from closed-cell foamed pads and have a thermal resistance RSI of 0.40.

.2 The day before pouring, the Consultant must approve the number of layers of insulating material to install.

.1 Based on the changing temperature of the concrete during the protection, the Consultant may require the Contractor to reduce or increase the number of layers; the removal or the addition of a layer must be made within three (3) hours following the request of the Consultant.

.3 Ensure that the insulation is installed in such a way that it prevents exposure of the concrete surfaces to the outside air for the duration of protection.

.4 The joints of the insulation blankets must have an overlap of at least 75 mm.

.5 The insulation is paid in the Tender Form at the item corresponding to the insulation (RSI 0.40 per layer).

.12 Temporary Shelter / Hoarding

.1 Construct protective shelters that surround structures.

.2 At least two (2) weeks before the start of concreting under protective shelters, prepare and submit an implementation plan for these shelters.

.3 Install the shelter so as to cover the surfaces of the structure to be concreted with canvas and tarpaulins.

.1 These covers must be watertight, durable, and securely fastened so as not to move for the duration of the protection.

.4 Ensure that the shelter has a height and a sufficient size to allow the pouring, curing, and finishing of the concrete within the shelter.

.5 The shelter is paid in the Tender Form at the item corresponding to the temporary shelter.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 03 20 00 - CONCRETE REINFORCING

.2 Section 03 30 00 - CAST-IN-PLACE CONCRETE

1.2 REFERENCES

.1 Definitions:

.1 Two basic shotcreting processes are:

.1 Dry mix process where mix water is added at nozzle.

.2 Wet mix process where mix water is added before concrete enters delivery hose, and compressed air is added at nozzle.

.2 Overspray: shotcrete material deposited away from intended receiving surface.

.2 Reference Standards:

.1 American Concrete Institute (ACI)

.1 ACI 506R-05, Guide to Shotcrete.

.2 ACI 506.2-95, Specification for Shotcrete.

.3 ACI Certified Shotcrete Nozzleman.

.2 ASTM International

.1 ASTM A123/A123M-12, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

.2 ASTM C42/C42M-13, Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.

.3 ASTM C618-12a, Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.

.4 ASTM C642-13, Standard Test Method for Density, Absorption, and Voids in Hardened Concrete.

.5 ASTM C1116-10a, Standard Specification for Fibre-Reinforced Concrete.

.6 ASTM C1202-12, Standard Test Method for Electrical Indication of Concrete's Ability to Resist Chloride Ion Penetration.

.3 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-3.3-07, Kerosene.

.4 CSA International

.1 CSA A23.1/A23.2-F09, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for shotcrete and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:

.1 Submit drawings stamped and signed by a competent and recognized professional engineer, member in good standing of the *Ordre des ingénieurs du Québec*.

.4 Documents / Samples to be Submitted in Relation to Sustainable Design

.1 Management of construction waste

.1 Submit the Waste Reduction Plan for the project which must specify the requirements for recycling and recovery.

.2 Recycled Content

.1 Where applicable, provide a document certifying the percentage of supplementary cimenting materials used to replace cement in the preparation of the bituminous binder.

1.4 QUALIFICATIONS

.1 Use operators of equipment for mixing and application of shotcrete experienced in process to be used.

.2 Operators: qualified to perform work to ACI 506R.

.3 Foremen: minimum 2 years' experience as ACI Certified Shotcrete Nozzleman.

.4 ACI Certified Shotcrete Nozzleman: minimum 6 months experience on similar applications.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:

.1 Store materials off ground, indoors, in dry location, and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Replace defective or damaged materials with new.

.4 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, packaging materials as specified in Construction Waste Management Plan Waste Reduction Workplan in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

Part 2 Products

2.1 MATERIALS

.1 Concrete mixes and materials: in accordance with Section 03 30 00 - Cast-in-Place Concrete and as specified below.

.1 Shotcrete aggregate gradation: to CSA A23.1/A23.2 and within limits specified.

Sieve Size	% Passing (by mass)	
	Fine Aggregate 1	Fine Aggregate 2
10 mm	100	100
5 mm	95-100	80-90
2.5 mm	80-100	60-75
1.25 mm	50-90	35-50
0.630 mm	25-65	15-30
0.315 mm	10-35	5-15
0.160 mm	2-10	0-8
0.080 mm	0-3	0-3

.2 Silica fume: to be from production of silicon or ferro-silicon alloys containing at least 75 % silicon.

.3 Fly ash: to ASTM C618.

.4 Use of admixtures subject to approval of the Consultant.

.5 Do not use calcium chloride or compounds containing calcium chloride.

.6 Water: to CSA A23.1/A23.2.

.2 Reinforcing steel: in accordance with Section 03 20 00 - Concrete Reinforcing.

.3 Steel anchors, supports and spacers: galvanized to ASTM A123/A123M.

.4 Kerosene: to CAN/CGSB-3.3.

2.2 EQUIPMENT

.1 Shotcrete equipment for dry wet mix process to ACI 506R.

.2 Batching equipment to proportion aggregate and cement mixtures on mass basis or by integral cement bag count and sand measured on volume basis.

.3 Use air supply system that delivers air uncontaminated by oil and capable of maintaining constant air pressure.

.4 Provide separate air hose and blow pipe, capable of simultaneous operation with shotcreting operation, for removal of rebound and dust.

.5 Equipment subject to approval of the Consultant.

.1 Maintain equipment in proper working order.

.2 Provide additional test panels and test cores as required by the Consultant to demonstrate that equipment is functioning properly during shotcreting operation.

2.3 MIXES

.1 Proportion concrete for dry wet process shotcrete to: CSA A23.1/A23.2, and give following properties:

.1 Use type GU cement.

.2 Silica fume: content maximum 15% by mass of cement content.

.3 Minimum compressive strength in place as determined from cores taken from test panels to ASTM C42/C42M:

.1 35 MPa at 28 days.

.4 Minimum cement content: 450 kg/m^3.

.5 Minimum water/cementitious materials ratio: 0.40.

.6 Minimum air content: 3.5 to 7 %.

2.4 SOURCE QUALITY CONTROL

.1 Pre-construction testing procedures to ACI 506.2. Pre-construction testing will be paid for by Owner.

.2 Make one test panel for each shooting position for each mix being considered for use on Project. Repeat for each nozzleman to be employed on Project.

.3 Provide 3cores from each test panel to testing laboratory designated by the Consultant.

Part 3 Execution

3.1 PREPARATION

.1 Prepare surfaces for shotcreting to ACI 506R.

.2 Remove unsound concrete with equipment approved by the Consultant. Remove only in areas and to depths as directed by the Consultant and as indicated.

.3 After acceptance of surface by the Consultant, sandblast water blast surfaces including existing reinforcing steel. Remove dirt, grease, oil or other substances which would interfere with bond of newly placed shotcrete.

.4 Clean, wet and damp dry air blast and water blast surfaces just prior to application of shotcrete.

3.2 APPLICATION

.1 Apply shotcrete to prepared surfaces to ACI 506R.

.2 Do not apply shotcrete to surface having running or free standing water.

.3 Do not apply shotcrete in high winds, when temperature is below 5 degrees C or when it is raining.

.4 Apply shotcrete to build concrete surface to finished lines. Acceptable minus tolerance of finished surfaces is 3 mm. Provide minimum cover of 75 mm over steel reinforcement.

.5 Use depth gauges depth probes in accordance with ACI 506R as guide to obtain correct thickness of shotcrete.

.6 Do not screed or finish surface of shotcrete.

.7 Protect adjacent surfaces from shotcrete and rebound during operations and clean up material deposited.

.8 During application continuously remove rebound from surfaces.

.9 Do not reuse rebound or overspray material.

3.3 FIELD QUALITY CONTROL

.1 Construction testing and acceptance of results to ACI 506.2, and as

.2 Test panels to ACI 506.2.

.3 Field cure panels in same manner as Work to ACI 506.2.

.4 Remove and replace shotcrete in areas where hollow spots, segregation, honeycombing, laminations, dry patches, slugs, voids or sand pockets occur, as directed by the Consultant.

3.4 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.

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

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

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

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

.2 Divert unused plasticizers, water-reducing agents and air-entraining agent materials from landfill to an official hazardous material collections site as approved by the Consultant.

.3 Unused plasticizers, water-reducing agents and air-entraining agents must not be disposed of into the sewer systems, into lakes, streams, onto the ground or in any other location where it will pose a health or environmental hazard.

3.5 PROTECTION

.1 Cure and protect finished surfaces to ACI 506.2.

.2 Apply 2 coats of protective coating consisting of mixture containing 50 % boiled linseed oil and 50 % kerosene by volume.

.3 First application: 135 mL/m^2; second application: 90 mL/m^2.

.4 Apply to clean dry surface when air temperature is above 10 degrees C.

.1 Apply second coat only when previous coat is thoroughly dried.

END OF SECTION

Part 1 General

1.1 SCOPE OF WORK

.1 Provide supervision of the works and provide all labour, equipment, tools, materials, transportation, and other services necessary to conduct and complete all work described and specified in this section and in the contract documents, including, but not limited to: clearing, grubbing trees of all sizes, of all tree stumps located in the work area previously approved by the Consultant, of all shrubs and bushes, branches, etc., excavation, stripping, and storage of the vegetative cover for later reuse, backfilling with granular material consistent and compaction of the specified surfaces to prepare for the various works of the present contract, and the installation of protective stone coverings.

.2 The Contractor must thoroughly clean the right of way of all materials resulting from the clearing and grubbing performed or resulting from work previously done. Deforestation must include the complete removal of any tree, stump, etc. The Contractor must, however, limit deforestation to include only the areas affected by the work, which must first be approved by the Consultant. Everything must be loaded, transported, and disposed of to a site that complies with the requirements of the MDDEFP's Policy on soil protection and the rehabilitation of contaminated land ("*Politique de protection des sols et de réhabilitation des terrains contaminés*"). Unless otherwise instructed, the topsoil must be collected as a priority and put in a pile for later use during the revegetation of certain areas.

.3 Rough clearing is to cut the trees and undergrowth, to a height above the ground not exceeding the prescribed height, and to remove the felled timber, wind throw, stumps, and debris littering the ground.

.4 Clearing to ground level is to cut to a level flush or near the existing ground level all standing trees, brush, shrubs, roots, stumps, and partially buried logs, and to remove the felled timber and debris littering the ground.

.5 Grubbing involves removing brush, dead wood, and trees with a trunk diameter less than 50 mm, and to remove the felled timber and debris.

.6 Stump clearing is to pull out stumps and roots to a depth below the existing ground level, not less than that prescribed, and to remove these materials.

1.2 STORAGE AND PROTECTION

.1 Provide adequate protection of all trees, landscaped areas, natural elements, benchmarks, streams, tree roots to be conserved.

.1 If necessary, repair damaged elements to the satisfaction of the Consultant.

.2 If the trees to conserve were damaged, replace as directed by the Consultant.

1.3 CLEARING

.1 The clearing works include, but are not limited to, providing equipment and manpower needed to achieve, according to the rules of the art, the clearing of the site according to the specifications and drawings, including:

.1 The felling of trees exclusively in the work area approved by the Consultant.

.2 The loading, transport, and disposal of debris to a site that complies with the requirements of the MDDEFP's Policy on soil protection and the rehabilitation of contaminated land ("*Politique de protection des sols et de réhabilitation des terrains contaminés"*).

1.4 GRUBBING AND STUMP CLEARING

.1 The stump clearing and grubbing works include, without limitation, providing equipment and manpower needed to achieve, according to the rules of the art, the grubbing and stump clearing of the site for woodlands, wetlands, or other terrains, according to the design specifications including:

.1 Rough clearing, clearing to the ground level, grubbing, and stump clearing.

.2 The storage of topsoil and humus for later reuse.

.3 Drainage and dewatering of the excavation, in accordance with the requirements of Section 31 23 33.01 - Excavating, Trenching and Backfilling.

.4 The loading, transport, and disposal of debris to a site that complies with the requirements of the MDDEFP's Policy on soil protection and the rehabilitation of contaminated land ("*Politique de protection des sols et de réhabilitation des terrains contaminés"*).

Part 2 Products

2.1 Disposal Site

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

Part 3 Execution

3.1 PREPARATION

.1 Inspect site and verify with the Consultant, items designated to remain. Locate and protect utility lines: preserve in operating condition active utilities traversing site.

.2 Identify and delineate areas proposed for the storage of topsoil.

3.2 ROUGH CLEARING

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

3.3 CLEARING TO GROUND LEVEL

.1 Perform ground level clearing to less than 100 mm above the ground.

.2 Perform ground level clearing work by hand, so as not to damage the muskeg.

3.4 GRUBBING

.1 Grub designated areas down to ground level.

3.5 STUMP CLEARING

.1 Pull out stumps and roots to at least 200 mm below the ground level.

.2 Remove visible stones and rock fragments less than 0.25 m³ in volume, but whose largest dimension is greater than 300 mm.

3.6 REMOVAL AND DISPOSAL OF DEBRIS

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

3.7 FINISHED SURFACE

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

3.8 REMOVAL OF TOPSOIL

.1 In work areas, following the clearing, grubbing, and stump clearing works, start removing topsoil and humus. Unless otherwise indicated, remove the entire depth of topsoil and humus contained within the perimeter of the work site.

.2 The layer of arable land, topsoil, or any other plant debris must be removed as directed by the Consultant.

.3 This excavation, even if the work requires it to be done separately or by sorting of material, is part of the 2nd class excavation materials.

.4 Topsoil and humus to be reused in the project must be placed in a pile in the spaces provided for this purpose and protected against contamination. The height of the pile must not exceed 2 m.

.5 The surplus of topsoil that cannot be used for the purposes of the project must be disposed of to a site that complies with the guidelines of MDDEFP's Policy on soil

protection and the rehabilitation of contaminated land ("*Politique de protection des sols et de réhabilitation des terrains contaminés"*).

END OF SECTION