



Real Estate Management, Design and Construction Branch
Gestion de l'immobilier, Design et construction

Design and Construction Division / Division design et construction

NCC File N°: DC 4080-7

**Jacques-Cartier Park
Gilmour-Hughson House
Remediation
Foundation Walls**

DMA Project N°: 2013-056



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DMA

Specifications

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SPECIFICATION

Division 01 – General Condition

- Section 01 00 00 - General Requirements
- Section 01 21 00 - Cash Allowances
- Section 01 33 00 - Submittal Procedures
- Section 01 35 30 - Health and Safety Requirements
- Section 01 35 43 - Environmental Procedures.
Appendix : Project Level Classification Analysis
- Section 01 45 00 - Quality Control
- Section 01 52 00 - Construction Facilities
- Section 01 61 00 - Common Product Requirements
- Section 01 73 00 - Execution
- Section 01 74 11 - Cleaning
- Section 01 74 21 - Construction/Demolition Waste And Management Disposal
- Section 01 77 00 - Closeout Procedures
- Section 01 78 00 - Closeout Submittals

Division 02 – Existing conditions

- Section 02 22 30 - Earthwork

Division 03 – Concrete works

- Section 03 30 00 - Cast-in-place Concrete
 - Appendix – Issued for information - Geotechnical Opinion

Division 04 - Masonry

- Section 04 03 07 -Masonry Repointing and Repair
- Section 04 03 08 -Mortaring
- Section 04 03 42 -Replacement of Stone
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- Section 32 91 19 - Topsoil, placement and grading

LIST OF DRAWINGS

ARCHITECTURE

- A-01 INDEX, SITE PLAN, ELEVATIONS PHOTOGRAPHS
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STRUCTURE

- S-01 BASEMENT

END

1. Summary

1.1 SUMMARY OF THE WORK

- .1 Description of Work:
 - .1 Work under this contract includes but is not necessarily limited to :
 - .1 Excavation and backfill along the North, East, West and South elevations walls, so as to permit:
 - .1 Repointing work for all of the exposed masonry joints on the foundation walls;
 - .2 Installation of a foundation drainage system including the establishment of a dry well and connections to the foundation drainage piping
 - .2 Repointing of masonry joints and stone unit replacement on the interior face of the East elevation wall;
 - .3 Construction of a new slab-on-grade concrete floor;
 - .4 Addition of a steel post support for an existing wood beam;
 - .5 Removal and disposal of decommissioned an interior fuel oil tank including base and concrete pad (if any) and of an exterior fuel oil tank (location to be discovered upon excavation of the perimeter)
 - .6 Decommissioning of an exterior closed septic tank by cleaning and filling
 - .7 Installation of new foundation drainage piping and drainage board and connection of the foundation drainage network to a dry well to excavate and backfill ;
 - .8 Cutting and removal from site of existing trees and shrubs including stumps at the perimeter of the building on the area affected by excavation and backfill work.
 - .2 Also included in the contract are all activities and tasks relative to obtaining all permits and authorizations from authorities having jurisdiction (City of Gatineau) required for the performance of the work as well as coordination with such authorities as needed.
- .2 Project-related Conditions:
 - .1 Contaminated soil: refer to Section 01 35 30 – Health and Safety.
 - .2 Environment : refer to section 01 35 43 - Environmental Procedures.
- .3 Interpretation
 - .1 The *Contract Documents* are complementary and what is required by any one shall be as binding as if required by all.
 - .2 Words and abbreviations that have well known technical or trade meanings are used in the *Contract Documents* in accordance with such recognized meanings.
 - .3 All terminology used within these documents identifying “Engineer”, “Architect”, “Consultant”, “NCC Engineer”, etc. shall be replaced by “NCC Representative” as defined in the *General Conditions*.
- .4 Priority of Contract Documents
 - .1 The priority of documents, from highest to lowest, is:
 - .1 Division 1 of the Specifications,
 - .2 Divisions 2 through 26 of the specifications (*and included on plans*)
 - .3 material and finishing schedules (*and included on plans*), and
 - .4 the drawings.
 - .2 Later dated documents govern over earlier documents of the same type.
 - .3 Architectural documents govern over structural documents with respect to the location of structural components.
 - .4 Architectural and landscape documents govern over mechanical and electrical documents with respect to fixture quantities and locations.
 - .5 Resolve conflict or discrepancy between the two language versions of the *Contract Documents* as directed by *NCC Representative*.

- .5 Site Examination
 - .1 The NCC will conduct a non-mandatory job showing of the work to be contracted. Claims for additional compensation will not be entertained for any items of labor or material required to complete the work that could have been reasonably ascertained by the Site Examination.
 - .2 Addenda
 - .1 Answers to questions directed to the *NCC Representative* and all amendments to the drawings or specifications during the tender period shall be issued in the form of Addenda to all. Addenda form part of the Contract Documents.
- .6 Reasonably foreseeable hidden conditions and interference
 - .1 Obtain directions from *NCC Representative* before proceeding with work if a substrate or subsurface condition or interference may be reasonably anticipated while not fully described in the *Contract Documents*.
 - .2 Redo work if directed by *NCC Representative* when such condition or interference is encountered without seeking prior direction from *NCC Representative*. Assume the costs of work required for this reason.
- .7 Reasonably foreseeable weather and climate conditions
 - .1 The Contractor shall plan and organize the work in a manner taking into account weather and climate conditions normally affecting the location of the work at the time of during which the work is to be performed.
 - .2 The Contractor shall provide at his expense any and all temporary facilities, equipment and materials required to assure that the work is performed within the contract time under the environmental conditions required by the applicable quality standards and best industry practices.
 - .3 For the application of paragraphs 1.1.7.1 and 1.1.7.1, normal weather conditions shall be defined as conditions that the Contractor can reasonably ascertain and provide for based on the statistical information available for the period of 1981 to 2010 from the Ottawa Macdonald-Cartier International Airport published by from Environment Canada regarding climate normals and averages for the location of the work.

2. Quality requirements

2.1 Regulatory requirements

- .1 Fees, permits, inspections, certificates and by-laws:
 - .1 Submit copies of all receipts, permits, inspection reports and certificates issued by authorities having jurisdiction to *NCC Representative*.
 - .2 Building Permit:
 - .1 Contractor shall provide building permit. Also provide all other applicable permits at own expense.

2.2 REFERENCES

- .1 Associations/organizations
 - .1 CSA: Canadian Standards Association
 - .2 HRSDC: Human Resources and Skills Development Canada
 - .3 NCC: The National Capital Commission
 - .4 NRC: National Research Council of Canada
 - .5 ULC: Underwriters Laboratories of Canada
- .2 Standards
 - .1 ULC-S115: ULC, ULC-S115 (Standard Method of Fire Tests of Firestop Systems)
 - .2 NBC: NRC, National Building Code (2010)
 - .3 NBC Part 8: NRC, National Building Code (2010), Part 8 (Construction Safety Measures)

- .4 WHMIS: HRSDC, Workplace Hazardous Materials Information System
- .5 FC 301: FCC, FC 301 (Standard for Construction Operations)
- .6 FC 302: FCC, FC 302 (Welding and Cutting Operations)

2.3 QUALIFICATIONS

- .1 Contractor shall provide prior to contract award all required qualification documents for the following work :
 - .1 As per Section 04 03 07 –Masonry Repointing

2.4 QUALITY CONTROL

- .1 Refer to Section 01 45 00 – Quality Control.

3. Price and payment procedures

3.1 ALTERNATIVES AND SUBSTITUTION PROCEDURES

- .1 As per indications in the General Instructions to the Bidders.
- .2 Content, quality and workmanship
 - .1 Substitutions: Considered when *materials*, or processes are specified with the term “approved equivalent” applied.
 - .2 *NCC Representative* determines “approved equivalent” status.
- .3 Assume cost of additional work or modifications to the *Work* due to the use of alternatives and substitutions.
- .4 Where a product or products have been listed with proprietary names in the technical specifications, the product text description shall be understood to include the statement “and approved equivalent.”

3.2 PAYMENT PROCEDURES

- .1 Schedule of values
 - .1 Submit a schedule of values:
 - .1 within five (5) days of contract award,
 - .2 with every progress claim, and
 - .3 as specified and directed by *NCC Representative*.
 - .2 Include the following items, and other items as directed by *NCC Representative*:
 - .1 mobilization costs,
 - .2 individual fees, permits and licenses;
 - .3 as-built records,
 - .4 work under individual trade sections of the specification, and
 - .5 individual change orders.
 - .3 Update schedule and include current value of work performed for each line item for each schedule submission.
 - .4 Obtain *NCC Representative* 's approval of schedule prior to first progress claim.
 - .5 Use approved schedule as basis for progress claims.

4. Administrative requirements

4.1 PROJECT MANAGEMENT AND COORDINATION

- .1 Meetings
 - .1 Mobilization meeting
 - .1 Organize and conduct mobilization meeting within five (5) days of *Contract* award, to be attended by *Contractor*, major subcontractor(s) and *NCC Representative*.
 - .2 Review specified post-contract award submittals including schedules, security procedures and provisions for site access.
 - .3 Commence work only AFTER submittals, security procedures and provisions for site access have been confirmed and approved by *NCC Representative*.
 - .2 Progress meetings: Organize and conduct meetings, to be attended by *Contractor*, major subcontractor(s) and *NCC Representative*, as directed by *NCC Representative*.
- .2 Maintain one copy each of the following at job site:
 - .1 Contract Documents,
 - .2 Site instructions,
 - .3 Permits, licenses and inspection reports,
 - .4 Reviewed copies of submittals, and
 - .5 Construction progress documentation.
- .3 Execute work with least possible disruption to the normal use of premises.
- .4 Service interruptions
 - .1 Notify *NCC Representative* and utility authorities 48-hours in advance of intended services interruptions.
 - .2 Obtain required approvals, permits and inspections from utility authorities.
 - .3 Minimize duration of interruptions.
 - .4 Schedule interruptions outside standard hours of work and preferably not during workweek.

4.2 CONSTRUCTION PROGRESS DOCUMENTATION

- .1 Construction schedule
 - .1 Submit the construction schedule to *NCC Representative* within five (5) days of contract award.
 - .2 The construction schedule shall conform to the following requirements :
 - .1 All activities necessary for the complete execution of the work in accordance with contract requirements must be shown separately for each specific work item, trade, subcontractor or control milestone or process;
 - .2 For each specialty, trade contractor or supplier, show as distinct activities submittals preparation, presentation and review process as well as dates for the issuance of purchase orders and deliveries to site of materials and equipment;
 - .3 Start and finish dates must be indicated for each activity. Except where specifically agreed to by *NCC Representative*, the list of activities must be fractioned so that no activity shall have a planned duration exceeding fourteen (14) calendar days;
 - .4 The schedule shall show the planned, technically logical, necessary sequence(s) of work with every activity having at least one predecessor and one successor in accordance with best recognized Critical Path Method scheduling practice, extending from the date of contract award to the planned date of final completion of the work. Resource-driven sequencing of the work shall be not be accepted by the *NCC Representative*.
- .2 As-built records
 - .1 Maintain precise and accurate as-built progress records by annotating a set of drawings and specifications set aside for this purpose.

- .2 Update records daily to note all deviations from indicated and specified requirements, including actual location of service lines, hidden constructions and services, and *materials* installed in the finished *Work*.
- .3 Transfer records to two sets of drawings and specifications obtained from *NCC Representative* prior to *NCC Representative* 's inspection for issuance of *Final Certificate of Completion*.

4.3 SUBMITTAL PROCEDURES

- .1 Refer to Section 01 33 00 – Submittal Procedures.

4.4 SPECIAL PROCEDURES

- .1 Refer to Sections 01 35 30 – Health and Safety and 01 35 43 - Environmental Protection.
- .2 Environmental procedures
 - .1 Pressure-treated wood: Do not use wood treated with compounds containing metals including, but not limited to, copper and arsenic, unless otherwise specified or indicated.
 - .2 Waste water: Dispose of water from cleaning operations, surface run-off, and pumping as directed by *NCC Representative*.
 - .3 Solid waste disposal
 - .1 Dispose of waste materials in accordance with requirements of authorities having jurisdiction
 - .2 Submit dump slips and receipts indicating the disposal date, method, and location to *NCC Representative*.
- .3 Security procedures
 - .1 Confidentiality: Return of all copies of all documentation related to the project, except records required to meet records retention requirements set out in law, when directed by *NCC Representative*.
 - .2 Site security: *NCC Representative* may require
 - .1 coordination and approval of all site visits and deliveries by a construction supervisor designated by *The Commission*,
 - .2 security escorts for all personnel working in non-public areas during normal working hours, and in all areas after normal working hours, and
 - .3 provision of temporary means and constructions to maintain the security of the building envelope and site perimeter.
- .4 Historic treatment procedures
 - .1 Protect relics, antiquities, items of historical or scientific interest, and similar objects found during the course of work or identified as such in documents.
 - .2 Each building component to be demolished or dismantled is to be recorded before undertaking those works. Notify to *NCC Representative* that components are ready to be recorded. Provide temporary access and allow 24 hours to undertake the record.
 - .3 Notify *NCC Representative* immediately of any findings. Await *NCC Representative*'s written instructions before proceeding with work adjacent to findings.
 - .4 Relics, antiquities, and items of historical or scientific interest shall remain the property of the Crown.
- .5 Environmental procedures
 - .1 See section 01 35 43

5. Temporary facilities and controls

5.1 TEMPORARY UTILITIES

- .1 Temporary electricity
 - .1 Existing service designated by *NCC Representative* may be used without charge; Provide all required equipment to connect to existing service. If available charges/capacity not sufficient to execute work, provide temporary source (ie. generator).
 - .2 Ensure capacity is adequate prior to imposing additional loads.
 - .3 Connect and disconnect at own expense and responsibility.
 - .4 Do not use electricity for space heating.
- .2 Temporary fire protection: to FC 301 and FC 302.
- .3 Temporary heating
 - .1 Provide temporary heating if required during construction period.
 - .2 Obtain *NCC Representative* 's approval for use of proposed heaters, heat distribution methods, venting method and location. Vent so as to prevent building staining and damage to plantations.
 - .3 Obtain *NCC Representative* 's approval for temporary use of installed building heating system. Assume responsibility for care and maintenance of heating system affected by temporary use, including initial, periodical and final filter replacements.
- .4 Temporary lighting: lighting is currently available within the building. If lighting level is not sufficient to execute work, provide additional temporary lighting. Provide all equipment required to connect to existing services at own expense and responsibility. At the completion of the work, remove all Contractor's equipment for temporary lighting.
- .5 Temporary telecommunication: Provide temporary telecommunications services and equipment required for own use and *NCC Representative*.
- .6 Temporary water
 - .1 Existing service designated by *NCC Representative* may be used without charge.
 - .2 Ensure capacity is adequate prior to imposing additional loads.
 - .3 Connect and disconnect at own expense and responsibility.

5.2 CONSTRUCTION FACILITIES

- .1 Refer to Section 01 52 00 – Construction Facilities.

5.3 CONSTRUCTION AIDS

- .1 Provide scaffolding, ladders, access equipment, conveyors, and other construction aids required for work: refer to Section 01 52 00 – Construction Facilities.
- .2 Support aids independently to minimize damage to structure, finished surfaces, landscaping, and paved surfaces.
- .3 Locate, construct and maintain aids in accordance with applicable legislation.
- .4 Access control
 - .1 Fixed aids: At the end of each workday, disable, clearly mark as off-bounds and fasten down.
 - .2 Mobile aids: Lock down when not in use. Store as directed by *NCC Representative* at close of workday.

5.4 TEMPORARY BARRIERS AND ENCLOSURES

- .1 Refer to Section 01 52 00 – Construction Facilities.

- .2 Protect adjacent work, occupants, air handling systems and building interior against spread of dust, harmful vapors and dirt. Use *materials* and methods that minimize inconvenience to occupants and damage to finished surfaces.
- .3 Obtain *NCC Representative's* approval of *materials* and methods including:
 - .1 area pressurization, barrier seals, and openings in barriers or in permanent enclosures,
 - .2 accommodation of activities affected by protection measures (ex. circulation, ventilation), and
 - .3 contaminant collection devices.
- .4 Provide weather-tight closures for unfinished building envelope openings.

5.5 PROJECT IDENTIFICATION

- .1 Site boards and other advertising are prohibited.
- .2 Provide common-use signs related to traffic control, information, instruction, use of equipment, public safety devices, in both official languages or by the use of commonly-understood graphic symbols, to *NCC Representative's* approval.

6. Product requirements

6.1 COMMON PRODUCT REQUIREMENTS

- .1 Refer to Section 01 61 00 – Common Product Requirements.
- .2 Use products compliant with standards referenced in applicable federal, provincial, and municipal legislation unless otherwise indicated or specified. Resolve conflict or discrepancy among standards as directed by *NCC Representative*.

6.2 PRODUCT STORAGE AND HANDLING REQUIREMENTS

- .1 Store *materials* in accordance with manufacturer instructions unless otherwise specified, and as directed by *NCC Representative*.
- .2 *NCC Representative* may designate on-site areas for storage of *material*. Equip and maintain designated storage areas.
- .3 Refer to Section 01 52 00 – Construction Facilities, for storage and protection of materials on site.
- .4 Do not unreasonably encumber site with *materials* or equipment. Move stored *materials* or equipment that interfere with operations of other contractors or occupants as directed by *NCC Representative*.
- .5 Obtain and pay for storage or work areas off-site as needed for operations.

7. Execution and closeout requirements

7.1 EXAMINATION AND PREPARATION

- .1 Acceptance of conditions, site examination
 - .1 Examine site and review all information pertaining to existing conditions likely to affect the proper execution of the *Work*.
 - .2 Claims for additional compensation will not be entertained for labor or *material* required to complete the *Work* that could have been reasonably ascertained by site examination and review of existing conditions during the tender period.

- .2 Construction layout
 - .1 Provide all equipment, *material* and services required to set out the *Work*, and as required by *NCC Representative* to inspect setting out of the *Work*.
 - .2 Set out the *Work* as indicated and specified. Resolve conflict or discrepancy among indicated and specified requirements as directed by *NCC Representative*.
 - .3 Submit record of setting out to *NCC Representative* if requested.

7.2 EXECUTION

- .1 Work restrictions
 - .1 Standard hours of work and workweek: 0800-1800 hrs, Monday to Friday.
 - .2 For work on site outside standard hours or workweek:
 - .1 obtain permission from *NCC Representative*,
 - .2 give *NCC Representative* 48-hours notice, and
 - .3 assume extra costs of labor, *material* and equipment.
- .2 Workmanship
 - .1 Use best quality workmanship, executed by workers experienced and skilled in respective duties for which they are employed.
 - .2 Install *materials* to manufacturer instructions unless otherwise specified.
 - .3 Ensure cooperation of workers in laying out the *Work*. Maintain efficient and continuous supervision.
 - .4 Pay for redoing work that, in the *NCC Representative* 's opinion, does not meet the indicated or specified quality of workmanship.
- .3 Cutting, patching, and making good
 - .1 Perform cutting, fitting, and patching to complete the *Work*.
 - .2 Make cuts with clean, true, smooth edges. Do not use impact devices to cut concrete, masonry or tile work.
 - .3 Prepare surfaces to receive patching and finishing. Remove and replace defective and non-conforming work that is to form the base or substrate for new work.
 - .4 Perform work to avoid damage to other work.
 - .5 Refinish surfaces to match adjacent finishes. Refinish continuous surfaces to nearest intersection. Refinish entire assemblies to attachment points.
 - .6 Fit work airtight to pipes, sleeves, ducts and conduits and, in the case of work penetrating exterior building elements, make watertight.
 - .7 Firestops and smoke seals: Install as required and to ULC-S115 to provide fire resistance not less than that of surrounding fire separation.
- .4 Sleeves, hangers and inserts: Coordinate setting and packing of sleeves and supply and installation of hangers and inserts. Obtain *NCC Representative's* approval before cutting into structure.

7.3 CLEANING AND WASTE MANAGEMENT

- .1 Refer to Sections 01 74 11 – Cleaning and 01 74 21 - Construction/Demolition Waste Management and Disposal.

7.4 PROTECTING COMPLETED WORK

- .1 Protect adjacent property and installed construction such as hard and soft landscaping, roads, utilities, structures, and finishes, from damage including the effects of extreme heat or cold.
- .2 Restore property and construction damaged during the execution of the *Work*, or provide appropriate compensation to affected parties.
- .3 Prevent snow and ice accumulation on the *Work*.

7.5 CLOSEOUT PROCEDURES

- .1 Refer to Section 01 77 00 – Closeout Procedures.
- .2 Refer to Section 01 78 00 – Closeout Submittals.

END OF SECTION

1. General

1.1 CASH ALLOWANCES

- .1 Include in Contract Price specified cash allowances.
- .2 Cash allowances, unless otherwise specified, cover net cost to Contractor and subcontractor of services, products, construction machinery and equipment, freight, handling, unloading, storage installation and other authorized expenses incurred in performing Work.
- .3 Contract Price, and not cash allowance, includes Contractor's and subcontractor's overhead and profit in connection with such cash allowance.
- .4 Contract Price will be adjusted by written order to provide for excess or deficit to each cash allowance.
- .5 Where costs under a cash allowance exceed amount of allowance, Contractor will be compensated for excess incurred and substantiated plus allowance for overhead and profit as set out in Contract Documents.
- .6 Include progress payments on accounts of work authorized under cash allowances in NCC's monthly certificate for payment.
- .7 Amount of each allowance :
 - .1 An amount of \$ 30,000.00 for the removal and disposal of an underground fuel storage tank located at the south of the building, including an allowance of \$10 000.00 for the removal and disposal of potentially contaminated soil and water as well as for replacement backfill material;
 - .2 An amount of \$ 3,500 for Cleaning & Backfilling of an existing septic tank, including trench excavation and removal of connecting piping to the building ;
 - .3 An amount of \$ 2 500,00 for the excavation and fill of a new foundation drainage dry well, including the installation of connecting piping to the existing building using the trench excavated for septic tank pipes and backfill of trench.

2. Products

2.1 NOT USED

- .1 Not Used.

3. Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

1. General

1.1 ADMINISTRATIVE

- .1 Submit to *NCC Representative* submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2 Do not proceed with Work affected by submittal until review is complete.
- .3 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .4 Where items or information is not produced in SI Metric units converted values are acceptable.
- .5 General contractor shall review submittals prior to submission. 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 by general; contractor, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .6 Notify *NCC Representative*, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .7 Verify field measurements and affected adjacent Work are co-ordinated.
- .8 Contractor's responsibility for errors and omissions in submission is not relieved by *NCC Representative* review of submittals.
- .9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by *NCC Representative* review.
- .10 Keep one reviewed copy of each submission on site.

1.2 SHOP DRAWINGS AND PRODUCT DATA

- .1 Conform to NCC General Terms and Conditions.
- .2 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.
- .3 Submit shop drawings bearing stamp and signature of qualified professional engineer registered or licensed in the Province of Ontario when required in specific section.
- .4 Allow five (5) business days for *NCC Representative* to review each submission.
- .5 Adjustments made on shop drawings by *NCC Representative* are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to [*NCC Representative* prior to proceeding with Work.
- .6 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.
- .7 Make changes in shop drawings as *NCC Representative* may require, consistent with Contract Documents. When resubmitting, notify *NCC Representative* in writing of revisions other than those requested.

- .8 Accompany submissions with transmittal letter containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
- .9 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.
- .10 After *NCC Representative* review, distribute copies.
- .11 Submit as requested up to six print copies of shop drawings for each requirement requested in specification Sections.
- .12 Submit as requested up to six print copies of product data sheets or brochures for requirements requested in specification Section where shop drawings will not be prepared due to standardized manufacture of product.
- .13 Submit as requested up to six print copies of test reports for requirements requested in specification Sections.
 - .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
 - .2 Testing must have been within (5) five years of date of contract award for project.
- .14 Submit as requested up to six print copies of certificates for requirements requested in specification Sections.
 - .1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
 - .2 Certificates must be dated after award of project contract complete with project name.
- .15 Submit as requested up to six print copies of manufacturers instructions for requirements requested in specification Sections.
 - .1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.

- .16 Submit as requested up to six print copies of Manufacturer's Field Reports for requirements requested in specification Sections.
 - .1 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .17 Submit as requested up to six print copies of Operation and Maintenance Data for requirements requested in specification Sections.
- .18 Delete information not applicable to project.
- .19 Supplement standard information to provide details applicable to project.
- .20 If upon review by *NCC Representative* review, no errors or omissions are discovered or if only minor corrections are made, [transparency] [copies] will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- .21 The review of shop drawings by *NCC Representative* review is for sole purpose of ascertaining conformance with general concept.
 - .1 This review shall not mean that *NCC Representative* review approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.
 - .2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

1.3 SAMPLES

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

1.4 MOCK-UPS

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

1.5 CERTIFICATES AND TRANSCRIPTS

- .1 Immediately after award of Contract, submit Workers' Compensation Board status.

.2 Submit transcription of insurance immediately after award of Contract.

2. **Products**

NOT USED

3. **Execution**

NOT USED

END OF SECTION

1. General

1.1 SECTION INCLUDES

- .1 Health and safety considerations required to ensure that the *NCC* shows due diligence towards health and safety on construction sites, and meets the requirements laid out in the *NCC's Policy - Occupational Health and Safety for Construction*.

1.2 REFERENCES

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
 - .1 Material Safety Data Sheets (MSDS).
- .3 Province of Quebec
 - .1 Act respecting occupational health and safety, Chapter S-2.1

1.3 SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan prior to Award of Contract. Plan shall include:
 - .1 Results of site specific safety hazard assessment.
 - .2 Results of safety and health risk or hazard analysis for site tasks and operation.
- .3 Submit 2 copies of Contractor's authorized representative's work site health and safety inspection reports to the *NCC Representative* weekly.
- .4 Submit copies of reports or directions issued by Federal or Provincial health and safety inspectors.
- .5 Submit copies of incident and accident reports.
- .6 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 – Submittal Procedures.
- .7 *NCC Representative* will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor prior to Award of Contract. Revise Plan as appropriate and resubmit prior to Award of Contract.
- .8 *NCC Representative's* review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .9 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 authorities prior to beginning of Work.

1.5 SAFETY ASSESSMENT

- .1 Perform site specific safety hazard assessment related to project.

1.6 MEETINGS

- .1 Schedule and administer Health and Safety meeting with *NCC Representative* prior to commencement of Work.

1.7 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 *NCC Representative* may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.8 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 and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.9 COMPLIANCE REQUIREMENTS

- .1 Comply with the Québec Occupational Health and Safety Act and Regulations for Construction Projects.

1.10 UNFORSEEN HAZARDS

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

1.11 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 Have minimum 2 years' site-related working experience specific to activities associated with similar projects.
 - .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 be under direction of site supervisor.

1.12 POSTING OF DOCUMENTS

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

1.13 CORRECTION OF NON-COMPLIANCE

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by *NCC Representative*.

- .2 Provide *NCC Representative* with written report of action taken to correct non-compliance of health and safety issues identified.
- .3 *NCC Representative* may stop Work if non-compliance of health and safety regulations is not corrected.

1.14 POWDER ACTUATED DEVICES

- .1 Use powder actuated devices only after receipt of written permission from *NCC Representative*.

1.15 WORK STOPPAGE

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

1.16 DESIGNATED SUBSTANCES, VOLATILE COMPOUNDS, UNFORESEEN HAZARDS

- .1 Notify *NCC Representative* 48 hours in advance of work in occupied areas involving designated substances (under applicable provincial legislation), hazardous substances (Canada Labor Code Part II Section 10), and before painting, or using volatile compounds.
- .2 Asbestos: Stop work and notify *NCC Representative* immediately if a material resembling asbestos is encountered. Do not proceed at such locations without written instructions from *NCC Representative*.
- .3 Silica: Use appropriate respiratory protection and ventilation during the demolition and/or modification of structures with products that contain silica. Silica is a crystalline component of concrete and cement. Silica dust is created by blasting, grinding, crushing and sandblasting silica-containing materials.

1.17 BUILDING SMOKING ENVIRONMENT

- .1 Smoking is not permitted on site. Obey smoking restrictions on building property.

2. Products (not used)

3. Execution (not used)

NOT USED

END OF SECTION

1. **General**

1.1 **REGULATIONS AND LAWS REALATED TO ENVIRONMENTAL PROTECTION**

- .1 Ensure that Federal and Provincial environmental authorities have been contacted in respect to project for any special environmental requirements and ensure this information is incorporated into documents and drawings.
- .2 No requirement in this Section to be construed as relieving Contractor of applicable Federal, Provincial, and Municipal environmental protection laws and regulations.
- .3 During construction, Contractor will be responsible for identifying, implementing, and submitting for approval additional requirements to be included in Environmental Protection Plan.

1.2 **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 humankind; or degrade environment aesthetically, culturally and/or historically.
- .2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction. Control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.3 **SUBMITTALS**

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

1.4 **FIRES**

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

1.5 **DISPOSAL OF WASTES**

- .1 Do not bury rubbish and waste materials on site.
- .2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.
- .3 Disposal of wastes shall be performed according to section 01 74 21.

1.6 **DRAINAGE**

- .1 Do not pump water containing suspended materials into waterways, sewer or drainage systems.
- .2 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

1.7 **SITE CLEARING AND PLANT PROTECTION**

- .1 Protect trees and plants on site and adjacent properties where indicated.
- .2 Assure protection by means of temporary fence (to confirm on site) for all trees located within 2,0m of any construction machinery used for the work or which are exposed to damage from the execution of the work.

1.8 WORK ADJACENT TO WATERWAYS

- .1 Do not operate construction equipment in waterways.
- .2 Do not use waterway beds for borrow material
- .3 Do not dump excavated fill, waste material or debris in waterways.
- .4 Ensure that no contamination, waste or other substances comes directly or indirectly into contact with waterway.
- .5 Comply with all requirements of government departments and agencies regarding environmental protection.
- .6 Clean immediately all spills or contamination. Contractor shall be liable for all damages, fines and charges relating to a spill or contamination resulting from directly or indirectly from their work.

1.9 POLLUTION CONTROL

- .1 Maintain temporary erosion and pollution control features installed under this contract.
- .2 Control emissions from equipment and plant to local authorities' emission requirements.
- .3 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area, by providing temporary enclosures.
- .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

1.10 HISTORICAL / ARCHAEOLOGICAL RESSOURCES

- .1 If archaeological or heritage resources are found during the work, Contractor shall immediately stop and notify the representative of the NCC.

1.11 NOTIFICATION

- .1 *NCC Representative* will notify Contractor in writing for any non-compliance with law and regulation on environmental protection.
- .2 Contractor, after receipt of notice from Authorities having jurisdiction, must inform *NCC Representative*
- .3 Contractor shall propose corrective action and take such action for approval by Authorities having jurisdiction.
- .4 *NCC Representative* will issue stop order of work until satisfactory corrective action has been taken.
- .5 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

1.12 REVIEW OF SITE CONDITION

- .1 During construction, site visits by Government departments and agencies can be performed. Ensure easy access at all times to such organisations and promptly comply with their requirements and directives.

1.13 MONITORING WELLS

- .1 See drawings for the location of monitoring wells.

- .2 Should the monitoring wells be uncovered during the execution of the work, Contractor shall promptly so advise NCC Representative and decommission wells Puits de surveillance (voir dessins) Si lors des travaux d'excavation, les puits de surveillance (2) sont mis à découvert, l'entrepreneur général devra aviser le représentant de la CCN et les mettre hors service selon les instructions du représentant de la CCN et le règlement 903 de l'Ontario (règlement sur les puits de l'Ontario)

1.14 CIRCULATION

- .1 Limit circulation of machinery and materials handling to paved surfaces.

2. Products

NOT USED

3. Execution

NOT USED

END OF SECTION

NCC

Project Level Classification Template

The purpose of this form is to establish whether a proposed project needs to undergo an environmental effects analysis to determine whether it is likely to cause significant adverse environmental effects as well as to classify it according to the classification levels outlined in ESS' Proposed New Environmental Effects Analysis under the New CEAA (2012) document.

Project Title: Miscellaneous works at Gilmour Hughson House

NCC Project Manager (PM)/Coordinator: Tom Laverty

PM/Coordinator Phone Number: 613-239-5678 ext 5460

Project Description:

This project involves several improvements to the Gilmour Hughson House (otherwise known as La Maison de vélo) near Jacques Cartier Park in Gatineau, Quebec. The project involves the excavation of a 3 ft wide trench around the building to access and repoint the foundation. The interior of the building foundation will also be repointed. This trench must be dug in order for workers and their equipment to access the foundation. There are 3 lilac trees and a shrub that will be removed in order to excavate, and these trees will be replaced at 2:1 ratio for a total of 6 new trees which will be planted elsewhere on the property. The project also involves the excavation and removal of a subsurface holding tank for wastewater. However, there is a large silver maple adjacent to the holding tank and some roots may need to be cut to facilitate removal. A furnace and fuel storage tank filled with oil will be removed from the basement of the building.

Anticipated Project Start Date: Fall 2013

1. Is this a “designated project”?

Under CEAA 2012, “designated project” means one or more physical activities that are (a) carried out in Canada or on federal lands;

(b) designated by regulations made under paragraph 84(a) or designated in an order made by the Minister under subsection 14(2); and

(c) linked to the same federal authority as specified in those regulations or that order.

It includes any physical activity that is incidental to those physical activities.

Yes **Proceed with the Environmental Assessment as required under CEAA 2012**

No **Proceed with Question no 2**

2. Is there a “project”?

Under Section 66 of CEAA 2012, “project” means a physical activity that is carried out on federal lands in relation to a physical work and is not a designated project.

- Yes** **Proceed with Question no 3**
 No **Environmental Effects Analysis not required**

3. Is the project located on NCC lands or on other federal lands over which the NCC exercises any power or performs any duty or function conferred upon it under any Act of Parliament (e.g., the National Capital Act) that would permit a project to be carried out, in whole or in part, on federal lands?

- Yes** **Proceed with Question no 4**
 No **Environmental Effects Analysis not required**

4. Can this project be excluded from a potential Environmental Effects Analysis to determine whether it could cause significant adverse environmental effects? Yes, if one of the following applies:

- *Excluded by the Exclusion provisions of Section 70 of CEAA 2012:*
 - *(a) in relation to which there are matters of national security;*
 - *(b) that is to be carried out in response to a national emergency for which special temporary measures are being taken under the Emergencies Act;*
or
 - *(c) that is to be carried out in response to an emergency, and carrying out of the project without delay is in the interest of preventing damage to property or the environment or is in the interest of public health or safety.*

- Yes** **Environmental Effects Analysis not required**
 No **Proceed with Question no 5**

5. Refer to the project level classification guideline in Annex B of the Proposed New Environmental Effects Analysis under the New CEAA 2012 project level classification guideline and determine whether the project level is 0, 1, 2, or 3.

Project Level Classification	
Project title: Miscellaneous works at Gilmour Hughson House	File No.: CP2218
[x]	Level 0 Project: Project does not require an Environmental Effects Analysis.
[]	Level 1 Project: Project requires completion of a Level 1 Environmental Effects Analysis Checklist , completed below.
[]	Level 2 Project: Project requires completion of an Environmental Effects Analysis Report .
[]	Level 3 Project: Project requires completion of an Environmental Effects Analysis Report .
<p>Rationale for Level Classification:</p> <p>The proposed project involves several improvements to the Gilmour Hughson House. These improvements, however, will require excavation in an area with high pre-contact archaeological potential and soil and groundwater contamination, and the removal of 2 storage tanks containing potentially hazardous substances.</p> <p>The closest water course is the Ruisseau de la Brasserie, a tributary of the Ottawa River, which is located approximately 50 m north of the Gilmour Hughson House. No in water work will take place as part of this project, and fish and fish habitat will not be adversely affected by the project activities.</p> <p>The project may cause a temporary but negligible decrease in ambient air quality due to the excavation activities. No significant increase in noise and vibration should occur.</p> <p>There are 3 lilac trees and 1 shrub (<i>Spiraea × vanhouttei</i>) located adjacent to the Gilmour Hughson House that need to be removed in order to excavate down to the foundation. In addition, there is evidence that these trees have contributed to the damage to the foundation [1]. Based on NCC tree replacement policy, these trees will be replaced at a 2:1 ratio elsewhere on the property. The subsurface holding tank for wastewater will also be removed, and this tank is located beneath the dripline of a mature silver maple. Excavation could sever or damage its roots in the vicinity. No other vegetation, apart from grass, will be disturbed as a result of this project.</p> <p>Soil in the area surrounding the house may become compacted as a result of the movement of machinery or personnel on the property. In addition, soils will be displaced during excavation for foundation repointing as well as to remove the wastewater storage tank.</p>	

Project Level Classification

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The miscellaneous activities will take place outside of the migratory birds nesting season (April 1st – August 15th). It is therefore unlikely for any migratory birds or nests protected under the *Migratory Birds Convention Act* (MBCA) to be present. No species protected under the *Species at Risk Act* (SARA) will be affected by project activities.

A Designated Substance Survey (DSS) of the Gilmour Hughson House was performed by Conestoga-Rovers & Associates in 2010 [2]. They identified asbestos in the damaged friable fire insulation and damaged non-friable transite above the furnace and duct work in the basement. Benzene is present in the above ground storage tank in the basement. Elevated concentrations of lead were found in painted surfaces throughout the house. Silica is present in the stone, mortar, concrete, and asphalt at the building, but these materials were in good condition at the time of the survey. Abatement of the damaged friable asbestos-containing fire insulation and damaged non-friable transite at the house is recommended. This asbestos has since been removed. The shed portion of the house was not explicitly mentioned in the DSS, however it is assumed that similar designated substances are found within the addition.

According to the NCC's AIMT system, the pre-contact archaeological potential is categorized as high [3]. A professional archaeologist must be on-site during the excavation of the soil surrounding the building. The Gilmour Hughson house itself is a recognized heritage structure [1].

Numerous site assessments have been performed for the property that the Gilmour Hughson house is located on [4-12]. The soils in this area of Jacques Cartier park are heterogeneously impacted with metals [13] and therefore soils need to be tested prior to offsite disposal [14]. In addition, there is approximately 10 m³ of impacted soil in the basement of the building as a result of an earlier storage tank leak [13].

Based on the foregoing analysis, the proposed project has been classified as a level 0 project. It has been determined by the NCC that the proposed project is unlikely to result in significant adverse environmental effects if the mitigation measures outlined below are implemented.

Mitigation Measures:

- Contractor will confine the circulation and staging of machinery, equipment and materials to existing paved surfaces, where possible.
- Construction activities that have the potential to release airborne particles should be avoided during extended periods of drought and high winds.
- Trees that are removed will be replaced at a 2:1 ratio elsewhere on the property.
- Should the removal of any silver maple roots be required to facilitate the removal of the underground wastewater storage tank, the cutting should be performed by a

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certified arborist according to the following guidelines:

- Roots should be cleanly cut using pruning shears or a saw wiped with alcohol before each cut. The cut ends should be sealed with bees wax.
- If tree roots are exposed during construction, but do not need to be removed, they should be immediately reburied with soil or temporarily covered with burlap and kept moist.
- The designated substance survey must be provided to the contractor and all designated substances and hazardous building materials identified in the DSS must be removed and disposed of at a licensed facility in accordance with provincial and federal standards. Health and safety standards for the proper handling of designated substances must also be followed.
- Prior to disposal, excavated soils should be analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX), petroleum hydrocarbons, volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), and metals to determine the appropriate disposal requirements. If soils are found to be contaminated (have concentrations above applicable federal CCME soil quality guidelines and/or MDDEP standards) they should be disposed of at a licensed landfill. A landfill will require that a leachate test (as per O. Reg. 558) is completed for any impacted soils prior to disposal (nearby landfills are in Ontario, therefore testing must be undertaken to meet Ontario regulations).
- The fuel storage tank should be removed in accordance with CCME guidelines (<http://www.ec.gc.ca/lcpe-cepa/default.asp?lang=En&n=61B26EE8-1&offset=15&toc=show>). Both the fuel storage tank and furnace must be emptied prior to removal. Once removal is complete, inspect the basement floor for indication of leaks/spills/stains. If evidence of a leak or spill is found, collect sub-slab soil samples to determine if soils have been impacted.
- An inactive fuel tank may be located approximately 3m from the foundation of the building. Caution should be exercised when excavating in this area. It is not known whether there is any product remaining in the inactive underground storage tank.
- There is a monitoring well located within the project footprint on the west side of the building. Caution should be exercised when excavating in this area so as to not damage the monitoring well. Soil should be backfilled around the monitoring well to the extent feasible while still providing space for repointing work. If this is not feasible, contact Eric Soulard at 5418 to determine the appropriate course of action. See figure 3 for approximate location of monitoring well.
- The subsurface holding tank for wastewater should be emptied prior to removal. Confirmatory soil samples should be taken beneath the tank to determine if there are any soil impacts beneath the tank.
- Due to the location of the building in a zone of high archaeological, the excavation work immediately surrounding the house must be supervised by a professional

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archaeologist [15]. If any archaeological resources or human remains are discovered all work shall be suspended immediately and the NCC Project Manager and Archaeologist (Ian Badgley, 613-239-5678, Ext. 5751, ian.badgley@ncc-ccn.ca) shall be notified forthwith. Measures for the protection and management of these resources or remains will be determined by the NCC Archaeologist. Work shall not be resumed at the location concerned prior to receipt by the NCC Project Manager of written confirmation that these measures have been put in place.

- The contractor shall develop a response plan familiar to the employer and workers and shall ensure that an emergency spill kit is available at the site at all times in case of accidental spill.
- In the event of an accident or spill, the contractor will immediately clean-up the affected area. The contractor must contact the NCC emergency number (613-239-5353), and the NCC PM. If required, remove and dispose contaminated materials at an appropriately licensed facility.
- All materials should be removed at the end of the project, and the site should be reinstated to its original conditions, or better, including the restoration of both topsoil and vegetation.

References:

- [1] PTAH Consultants Inc. (2012). "Gilmour and Hughson Building, 350 Laurier Road, Gatineau, Quebec. Heritage Structure Report." 322p.
- [2] Conestoga-Rovers & Associates. (2010). "Designated Substance Survey. Asset No. 326426 & 342944." 51p.
- [3] NCC's AIMT Service. Extracted September 30th, 2013.
- [4] Trow Associates Inc. (2005a). "Limited Phase II Environmental Site Assessments, Maison du Velo, Jacques Cartier Park, Gatineau, Quebec." 214p.
- [5] Trow Associates Inc. (2005b). "Phase I and II Environmental Site Assessment, Jacques Cartier Park-North, Gatineau, Quebec." 121p.
- [6] Trow Associates Inc. (2008a). "Supplemental Phase II Environmental Site Assessment, Jacques Cartier Park North and South Gatineau, Quebec." 86p.
- [7] Trow Associates Inc. (2008a). "Supplemental Phase II Environmental Site Assessment, Jacques Cartier Park North, Gatineau, Quebec." 86p.
- [8] Trow Associates Inc. (2008b). "Supplemental Phase II Environmental Site Assessment, Jacques Cartier Park North, Gatineau, Quebec." 67p.
- [9] Trow Associates Inc. (2009). "Groundwater monitoring program." 68p.
- [10] Trow Associates Inc. (2010). "Preliminary Quantitative Risk Assessment. Petroleum Hydrocarbon Impacted Area Adjacent to the Ottawa River, Jacques Cartier Park-North, Gatineau, Quebec." 74p.
- [11] Golder Associates. (2011). "Groundwater monitoring at Jacques Cartier Park North, Gatineau, Quebec." 103p.


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- [12] Golder Associates. (2012). "Revised Preliminary Quantitative Risk Assessment for Jacques Cartier Park North." 363p.
- [13] Personal communication between Andrea Mckenzie and Valérie Bédard, September 25th, 2013.
- [14] Personal communication between Siobhan Sutherland and Valérie Bédard, September 20th, 2013.
- [15] Personal communication between Ian Badgley, Samantha Sabo, and Valérie Bédard, October 9th, 2013.


Prepared by:


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Environmental Assessment Student
National Capital Commission

Date:

October 11th, 2013

Reviewed and Approved by:


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Environmental Officer
National Capital Commission

Date:

11 oct. 2013

Figures

AMT
CCN

Fuel Storage Tanks

- Active
- Inactive

Monitoring Wells

-

Gilmour Hughson House



Imagery/Imagerie: 2011/2007 Aerial image

Published/Publié : 2013/9/20



Disclaimer: The NCC does not guarantee this information to be correct, current, or complete. The maps are only intended for internal use as a general reference and are not intended or suitable for site-specific, financial or legal decisions. Any use to the contrary of the above stated uses is the responsibility of the user and such use is at the user's own risk.
 Déclaration de responsabilité : La Commission de la capitale nationale (CCN) ne garantit pas ces informations pour être correct, actuel, ou complet. Les cartes sont seulement destinées à l'utilisation interne comme une référence générale et ne sont pas destinées ou appropriées aux décisions spécifiques d'un site, financières ou légales. N'importe quelle utilisation au contraire des susdites utilisations exposées est la responsabilité de l'utilisateur et une telle utilisation est au propre risque de l'utilisateur.



Figure 1: Aerial view of the Gilmour Hughson house with location of active fuel storage tank (blue dot) and monitoring wells (pink dots).



Figure 2: Exterior view of the Gilmour Hughson House.

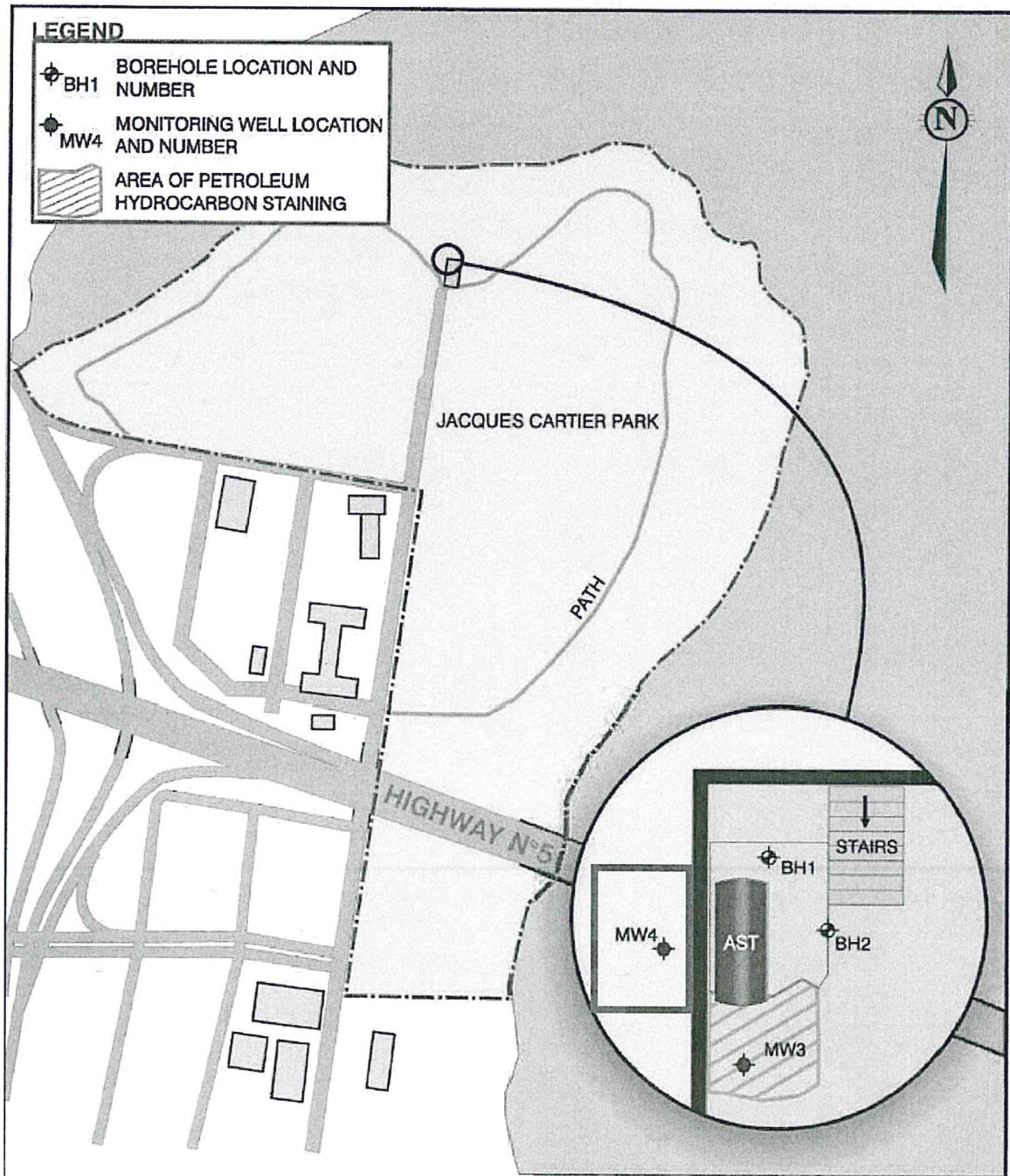


Figure 3: Location of exterior monitoring well (red box).

1. General

1.1 INSPECTION

- .1 Allow *NCC Representative* access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by *NCC Representative* or by Inspector when prescribed by law at 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 *NCC Representative* will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction

1.2 INDEPENDENT INSPECTION AGENCIES

- .1 Independent Inspection/Testing Agencies will be retained by the *NCC Representative* for purpose of inspecting and/or testing portions of Work. Cost of such services will be paid by the NCC.
- .2 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .3 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 *NCC Representative* at no cost to the Commission. The Contractor shall pay costs for retesting and reinspection.

1.3 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.

1.4 PROCEDURES

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

1.5 REJECTED WORK

- .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not. 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 *NCC Representative* it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, The Commission 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 *NCC Representative*.

1.6 REPORTS

- .1 Submit 4 copies of inspection and test reports to *NCC Representative*.

1.7 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 *NCC Representative* and may be authorized as recoverable.

1.8 MOCK-UPS

- .1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of Sections required to provide mock-ups.
- .2 Construct in locations acceptable to *NCC Representative* as specified in specific Section.
- .3 Prepare mock-ups for *NCC Representative* review with reasonable promptness and in orderly sequence, to not cause delays in Work.
- .4 Failure to prepare mock-ups in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .5 Remove mock-up at conclusion of Work or when acceptable to *NCC Representative*.
- .6 Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.

1.9 MILL TESTS

- .1 Submit mill test certificates as requested or required by specification Sections.

1.10 EQUIPMENT AND SYSTEMS

- .1 Submit adjustment and balancing reports for mechanical, electrical and building equipment or systems.
- .2 Refer to specific Section for definitive requirements.

2. Products

NOT USED

3. Execution

NOT USED

END OF SECTION

1. **General**

1.1 **INSTALLATION AND REMOVAL**

- .1 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.
- .2 Submit site plan in accordance with Section 01 33 00.
- .3 Identify areas which have to be gravelled to prevent tracking of mud.
- .4 Indicate use of supplemental or other staging area.
- .5 Provide construction facilities in order to execute work expeditiously.
- .6 Remove from site all such work after use.

1.2 **HOISTING**

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

1.3 **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.

1.4 **CONSTRUCTION PARKING**

- .1 Parking will be permitted on site. Obtain *NCC Representative* approval, for its location.

1.5 **SITE OFFICE**

- .1 Contractor may use available space inside the building for the purposes of construction office facilities.
- .2 Keep the premises clean during the construction work and clean or restore the premises at the end of the work to NCC Representative's satisfaction.
- .3 Provide marked and fully stocked first-aid case in a readily available location.

1.6 **EQUIPMENT, TOOL AND MATERIALS STORAGE**

- .1 Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials. This applies without being limited to the dismantled of masonry stone.
- .2 Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with work activities.

1.7 **SANITARY FACILITIES**

- .1 Existing facilities as designated may be used during construction period.
- .2 Clean regularly and keep area and premises in sanitary condition.

1.8 PROTECTION OF EXISTING STRUCTURES

- .1 The Contractor shall take all measures required, to the satisfaction of the Owner, to adequately protect from any damage resulting from his work structures adjacent to the work site as well as to protect the integrity of existing elements and structures of the building.
- .2 At commencement of work, carry out a visit of the premises with the Owner so as to consign the condition of the premises and of existing elements intended to be conserved or protected.
- .3 Over and above the building structures and elements, protect from damage trees, shrubs and other plantings to the satisfaction of the Owner.
- .4 Contractor to assume responsibility for damages caused as a result of insufficient or inadequate protective measures.
- .5 Dismantle, displace and reinstall existing grilles, fences, barriers and other landscaping elements so as to facilitate the execution of the work.
- .6 Damage to existing elements must be repaired and made good to the satisfaction of the Owner by the Contractor and at his expense. Should the Contractor neglect or refuse to carry out the required repairs, the Owner reserves the right to have the work performed by others and pay the costs of such from the stipulated holdbacks from the sums due to the Contractor.

1.9 CONSTRUCTION SIGNAGE

- .1 No other signs or advertisements, other than warning signs, are permitted on site.
- .2 Signs and notices for safety and instruction in both official languages Graphic symbols to CAN/CSA-Z321.
- .3 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 *NCC Representative*.

1.10 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.
- .5 Provide and locate on site, according to *NCC Representative* approval, containers for collection of waste materials and debris.

1.11 SITE ENCLOSURE

- .1 Erect a temporary construction site enclosure conforming to ordinances and regulations applicable at the location of the work to protect public safety. The area of the site outside the enclosure fence is to remain accessible to the public for the duration of the work. Contractor to provide and maintain installation appropriate to keeping access to the construction site and the building secure and to protect the public safety at the perimeter of the work site at all times.
- .2 As work progresses, maintain, repair, consolidate, move or alter site fencing as required to suit the requirements of the work for the entire duration so as to protect the site from intrusion and protect the public's safety.
- .3 Near the end of the work when the site enclosure is no longer useful or when the NCC's Representative so directs, dismantle and remove from site all enclosure materials.

1.12 OPENING THROUGH EXTERIOR WALLS

- .1 Obtain *NCC Representative* approval before undertaking opening through masonry walls.
- .2 Provide closure in every opening. Closure shall be built to prevent damages to building caused by water and snow. Closure shall be airtight and watertight.
- .3 Provide closure to prevent entrance of public and wildlife animals.
- .4 Until Final Inspection, ensure that closures stay in place and in good condition..
- .5 Before Final Inspection and to the satisfaction of the *NCC Representative*, remove closures and block wall openings, as such originally built,

2. Product

2.1 NOT USED

- .1 Not Used.

3. Execution

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.
- .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
- .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

END OF SECTION

1. General

1.1 REFERENCES

- .1 Within text of each specifications section, reference may be made to reference standards.
- .2 Conform to these reference standards, in whole or in part as specifically requested in specifications.
- .3 If there is question as to whether products or systems are in conformance with applicable standards, *NCC Representative* reserves right to have such products or systems tested to prove or disprove conformance.
- .4 Cost for such testing will be born by *NCC Representative* in event of conformance with Contract Documents or by Contractor in event of non-conformance.

1.2 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 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .3 Should disputes arise as to quality or fitness of products, decision rests strictly with *NCC Representative* based upon requirements of Contract Documents.
- .4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .5 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.

1.3 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 *NCC Representative* of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.
- .2 In event of failure to notify *NCC Representative* at commencement of Work and should it subsequently appear that Work may be delayed for such reason, *NCC Representative* reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.4 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 Store sheet materials, lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.
- .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 *NCC Representative*.
- .9 Touch-up damaged factory finished surfaces to *NCC Representative* satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.5 TRANSPORTATION

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

1.6 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 *NCC Representative* in writing, of conflicts between specifications and manufacturer's instructions, so that *NCC Representative* will establish course of action.
- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes *NCC Representative* to require removal and re-installation at no increase in Contract Price or Contract Time.

1.7 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 *NCC Representative* if required Work is such as to make it impractical to produce required results.
- .2 Do not employ anyone unskilled in their required duties. *NCC Representative* 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 *NCC Representative*, whose decision is final.

1.8 CO-ORDINATION

- .1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.
- .2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.9 CONCEALMENT

- .1 In finished areas conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.
- .2 Before installation inform *NCC Representative* if there is interference. Install as directed by *NCC Representative*.

1.10 REMEDIAL WORK

- .1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as required.
- .2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.11 LOCATION OF FIXTURES

- .1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.
- .2 Inform *NCC Representative* of conflicting installation. Install as directed.

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 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.
- .3 Bolts may not project more than one diameter beyond nuts.
- .4 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 without written approval of *NCC Representative*.

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.

2. **Products**

NOT USED

3. **Execution**

NOT USED

END OF SECTION

1. **General**

1.1 **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 NCC 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 NCC or separate contractor.
 - .7 Written permission of affected separate contractor.
 - .8 Date and time work will be executed.

1.2 **MATERIALS**

- .1 Required for original installation.
- .2 Change in Materials: Submit request for substitution in accordance with Section 01 00 00 – General Requirements.

1.3 **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.

1.4 **EXECUTION**

- .1 Execute cutting, fitting, and patching to complete Work.
- .2 Fit several parts together, to integrate with other Work.
- .3 Uncover Work to install ill-timed Work.
- .4 Remove and replace defective and non-conforming Work.
- .5 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
- .6 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.

- .7 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.
- .8 Restore work with new products in accordance with requirements of Contract Documents.
- .9 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- .10 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces #to nearest intersection. Refinish assemblies by refinishing entire unit.
- .11 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal.

2. Products

NOT USED

- .1 Not Used.

3. Execution

NOT USED

END OF SECTION

1. General

1.1 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 *NCC Representative*. Do not burn waste materials on site.
- .3 Clear snow and ice from access to building, bank/pile snow in designated areas only. Clear snow and ice from scaffolding.
- .4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .5 Provide on-site containers for collection of waste materials and debris.
- .6 Provide and use marked separate bins for recycling. Refer to Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .7 Dispose of waste materials and debris off site.
- .8 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .9 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .10 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

1.2 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 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.
- .5 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls and floors.
- .6 Clean lighting reflectors, lenses, and other lighting surfaces.
- .7 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
- .8 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
- .9 Remove dirt and other disfiguration from exterior surfaces.
- .10 Clean and sweep roofs, gutters, areaways, and sunken wells.
- .11 Sweep and wash clean paved areas.
- .12 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.

1.3 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal, paper, plastic, polystyrene, corrugated cardboard, pallets and packaging material in appropriate on-site for recycling in accordance with Waste Management Plan.

2. Products

NOT USED

3. Execution

NOT USED

END OF SECTION

1. General

1.1 WASTE MANAGEMENT GOALS

- .1 Prior to start of Work conduct meeting with *NCC Representative* to review and discuss Waste Management Plan and Goals.
- .2 Provide *NCC Representative* documentation certifying that waste management, recycling, reuse of recyclable and reusable materials have been extensively practiced.
- .3 Accomplish maximum control of solid construction waste.
- .4 Preserve environment and prevent pollution and environment damage.

1.2 REFERENCES

- .1 LEED Canadian Green Building Council (CGBC), Green Building Rating System, For New Construction and Major Renovations LEED Canada-NC, Version 1.0 - December 2004.

1.3 DEFINITIONS

- .1 Demolition Waste Audit (DWA): relates to actual waste generated from project.
- .2 Materials Source Separation Program (MSSP): consists of series of ongoing activities to separate reusable and recyclable waste material into material categories from other types of waste at point of generation.
- .3 Separate Condition: refers to waste sorted into individual types.
- .4 Waste Audit (WA): detailed inventory of materials in building. Involves quantifying by volume/weight amounts of materials and wastes generated during construction, demolition, deconstruction, or renovation project. Indicates quantities of reuse, recycling and landfill. Refer to Schedule A.
- .5 Waste Reduction Workplan (WRW): written report which addresses opportunities for reduction, reuse, or recycling of materials. Refer to Schedule B. WRW is based on information acquired from WA (Schedule A).

1.4 DOCUMENTS

- .1 Maintain at job site, one copy of following documents:
 - .1 Waste Audit.
 - .2 Waste Reduction Workplan.
 - .3 Material Source Separation Plan.
 - .4 Schedules A - B – C and E completed for project.

1.5 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Prepare and submit following prior to project start-up:
 - .1 Submit 2 copies of completed Waste Audit (WA): Schedule A.
 - .2 Submit 2 copies of completed Waste Reduction Workplan (WRW): Schedule B.
 - .3 Submit 2 copies of completed Demolition Waste Audit (DWA): Schedule C.
 - .4 Submit 2 copies of Materials Source Separation Program (MSSP) description.

1.6 WASTE AUDIT (WA)

- .1 Conduct WA prior to project start-up.

- .2 Prepare WA: Schedule A.
- .3 Record, on WA - Schedule A, extent to which materials or products used consist of recycled or reused materials or products.

1.7 WASTE REDUCTION WORKPLAN (WRW)

- .1 Prepare WRW prior to project start-up.
- .2 WRW should include but not limited to:
 - .1 Destination of materials listed.
 - .2 Deconstruction/disassembly techniques and sequencing.
 - .3 Schedule for deconstruction/disassembly.
 - .4 Location.
 - .5 Security.
 - .6 Protection.
 - .7 Clear labelling of storage areas.
 - .8 Details on materials handling and removal procedures.
 - .9 Quantities for 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 Describe management of waste.
- .5 Identify opportunities for reduction, reuse, and recycling of materials. Based on information acquired from WA.
- .6 Post WRW or summary where workers at site are able to review content.

1.8 DEMOLITION WASTE AUDIT (DWA)

- .1 Prepare DWA prior to project start-up.
- .2 Complete DWA: Schedule C.

1.9 MATERIALS SOURCE SEPARATION PROGRAM (MSSP)

- .1 Prepare MSSP and have ready for use prior to project start-up.
- .2 Implement MSSP for waste generated on project in compliance with approved methods and as reviewed by *NCC Representative*.
- .3 Provide on-site facilities for collection, handling, and storage of anticipated quantities of reusable and recyclable materials.
- .4 Provide containers to deposit reusable and recyclable materials.
- .5 Locate containers in locations, to facilitate deposit of materials without hindering daily operations.
- .6 Locate separated material in area which minimize material damage.
- .7 Collect, handle, store on-site, and transport off-site, salvaged materials in separate condition.
 - .1 Transport to approved and authorized recycling facility.

1.10 STORAGE, HANDLING AND PROTECTION

- .1 Unless specified otherwise, materials for removal become Contractor's property.
- .2 Protect, stockpile, store and catalogue salvaged items.

- .3 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.
- .4 Protect structural components not removed for demolition from movement or damage.
- .5 Support affected structures. If safety of building is endangered, cease operations and immediately notify *NCC Representative*.
- .6 Protect surface drainage, mechanical and electrical from damage and blockage.
- .7 Separate and store materials produced during dismantling of structures in designated areas.

1.11 DISPOSAL OF WASTES

- .1 Do not bury rubbish or waste materials.
- .2 Do not dispose of waste, volatile materials, mineral spirits, oil and paint thinner] into waterways, storm, or sanitary sewers.
- .3 Remove materials from deconstruction as deconstruction/disassembly Work progresses.

1.12 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises.
- .2 Provide temporary security measures approved by *NCC Representative*.

1.13 SCHEDULING

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

2. Products

NOT USED

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 Remove tools and waste materials on completion of Work, and leave work area in clean and orderly condition.
- .2 Clean-up work area as work progresses.
- .3 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 *NCC Representative* and consistent with applicable fire regulations.
 - .1 Mark containers or stockpile areas.
 - .2 Provide instruction on disposal practices.

- .2 On-site sale of materials is not permitted.
- .3 Demolition Waste: Template outlined below can be used by Contractor.

Material Type	Recommended Diversion %	Actual Diversion %
Metallic Pipes and conduits	100%	
Mortar and Concrete	100%	
Wood (uncontaminated)	100%	
Masonry units	100%	
Other	100%	

- .4 Construction Waste: Template outlined below can be used by Contractor.

Material Type	Recommended Diversion %	Actual Diversion %
Cardboard	100%	
Plastic Packaging	100%	
Mortar and Concrete	100%	
Metallic elements	100%	
Wood (uncontaminated)	100%	
Masonry units	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) % Recycled	(7) % Reused
Wood and Plastics Material Description						
Off-cuts						
Warped Pallet Forms						
Plastic Packaging						
Cardboard Packaging						
Masonry units						
Mortar and Concrete						
Wood						

(1) Material Category	(2) Material Quantity Unit	(3) Estimated Waste %	(4) Total Quantity of Waste (unit)	(5) Generation Point	(6) % Recycled	(7) % Reused
Metallic elements						
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	Actual	(5) Recycled Amount (unit) Projected	Actual	(6) Material(s) Destina- tion
Wood and Plastics Material							
Chutes							
Warped Pallet Forms							
Plastic Packag ing							
Card- board Packag ing							
Wood							
Metallic elements							
Other							

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) Remarks and Assumptions
Wood						
Wood Stud						
Plywood						
Panel Regular						
Slab Regular						
Wood Laminate						

3.7 CANADIAN GOVERNMENTAL DEPARTMENTS CHIEF RESPONSIBILITY FOR THE ENVIRONMENT

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

Province	Address	General Inquires	Fax
Québec			
	Environment Canada Toronto ON	416-734-4494	

END OF SECTION

1. General

1.1 INSPECTION AND DECLARATION

- .1 Contractor's Inspection: Contractor and Subcontractors: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
 - .1 Notify *NCC Representative* in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.
 - .2 Request *NCC Representative's* Inspection.
- .2 *NCC Representative's* Inspection: *NCC Representative* and Contractor will perform inspection of Work to identify obvious defects or deficiencies. Contractor to correct Work accordingly.
- .3 Completion: submit written certificate that following have been performed:
 - .1 Work has been completed and inspected for compliance with Contract Documents.
 - .2 Defects have been corrected and deficiencies have been completed.
 - .3 Equipment and systems have been tested, adjusted and balanced and are fully operational.
 - .4 Certificates required by Boiler Inspection Branch, Fire Commissioner and Utility companies have been submitted.
 - .5 Operation of systems have been demonstrated to Commission's personnel.
 - .6 Work is complete and ready for final inspection.
- .4 Final Inspection: when items noted above are completed, request final inspection of Work by *NCC Representative*, and Contractor. If Work is deemed incomplete by *NCC Representative*, complete outstanding items and request reinspection.
- .5 Declaration of Substantial Performance: when *NCC Representative* considers deficiencies and defects have been corrected and it appears requirements of Contract have been substantially performed, make application for certificate of Substantial Performance. Refer to conditions in NCC's Contract for specifics to application.
- .6 Commencement of Lien and Warranty Periods: date of Commission's acceptance of submitted declaration of Substantial Performance shall 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: when *NCC Representative* considers final deficiencies and defects have been corrected and it appears requirements of Contract have been totally performed, make application for final payment. Refer to conditions in NCC's Contract. If Work is deemed incomplete by *NCC Representative*, complete outstanding items and request reinspection.
- .8 Payment of Holdback: after issuance of certificate of Substantial Performance of Work, submit an application for payment of holdback amount in accordance with NCC's Contract.

1.2 CLEANING

- .1 Do the cleaning in accordance with Section 01 74 11 - Cleaning.
- .2 Remove waste and surplus materials, rubbish and construction facilities from the site in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

2. Products

NOT USED

3. Execution

NOT USED

END OF SECTION

1. **General**

1.1 **SUBMITTALS**

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Two (2) weeks prior to Substantial Performance of the Work, submit to the *NCC Representative*, four (4) final copies of operating and maintenance manuals in English and French.
- .3 Ensure spare parts, maintenance materials and special tools provided are new, undamaged or defective, and of same quality and manufacture as products provided in Work.
- .4 Furnish evidence, if requested, for type, source and quality of products provided.
- .5 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.
- .6 Pay costs of transportation.

1.2 **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. 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 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. Bind in with text; fold larger drawings to size of text pages.
- .9 Provide 1:1 scaled CAD files in dwg format on CD or DVD.

1.3 **CONTENTS - EACH VOLUME**

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

1.4 AS-BUILTS AND SAMPLES

- .1 Maintain, in addition to requirements in General Conditions, at site for *NCC Representative* one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to Contract.
 - .5 Reviewed shop drawings, product data, and samples.
 - .6 Field test records.
 - .7 Inspection certificates.
 - .8 Manufacturer's certificates.
- .2 Store record documents and samples in field office apart from documents used for construction. 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. Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for inspection by *NCC Representative*.

1.5 RECORDING ACTUAL SITE CONDITIONS

- .1 Record information on set of opaque drawings, and in copy of Project Manual, provided by *NCC Representative*.
- .2 Provide felt tip marking pens, maintaining separate colours for each major system, for recording information.
- .3 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
- .4 Contract Drawings and shop drawings: mark each item to record actual construction, including:
 - .1 Measured depths of elements of foundation in relation to finish first floor datum.
 - .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - .3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
 - .4 Field changes of dimension and detail.
 - .5 Changes made by change orders.
 - .6 Details not on original Contract Drawings.
 - .7 References to related shop drawings and modifications.
- .5 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.
- .6 Other Documents: maintain manufacturer's certifications, inspection certifications and field test records required by individual specifications sections.

1.6 EQUIPMENT AND SYSTEMS

- .1 Each Item of Equipment and Each System: include description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- .2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.
- .3 Include installed colour coded wiring diagrams.
- .4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- .5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- .6 Provide servicing and lubrication schedule, and list of lubricants required.
- .7 Include manufacturer's printed operation and maintenance instructions.
- .8 Include sequence of operation by controls manufacturer.
- .9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- .10 Provide installed control diagrams by controls manufacturer.
- .11 Provide Contractor's co-ordination drawings, with installed colour coded piping diagrams.
- .12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- .13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- .14 Include test and balancing reports as specified in Section 01 45 00 - Quality Control.
- .15 Additional requirements: as specified in individual specification sections.

1.7 MATERIALS AND FINISHES

- .1 Building Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and colour and texture designations. Provide information for re-ordering custom manufactured products.
- .2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .3 Moisture-Protection and Weather-Exposed Products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .4 Additional Requirements: as specified in individual specifications sections.

1.8 SPARE PARTS

- .1 Provide spare parts, in quantities specified in individual specification sections.
- .2 Provide items of same manufacture and quality as items in Work.

- .3 Deliver to location as directed by *NCC Representative*; place and store.
- .4 Receive and catalogue items. Submit inventory listing to *NCC Representative*. Include approved listings in Maintenance Manual.
- .5 Obtain receipt for delivered products and submit prior to final payment.

1.9 MAINTENANCE MATERIALS

- .1 Provide maintenance and extra materials, in quantities specified in individual specification sections.
- .2 Provide items of same manufacture and quality as items in Work.
- .3 Deliver to location as directed by NCC Engineer; place and store.
- .4 Receive and catalogue items. Submit inventory listing to *NCC Representative*. Include approved listings in Maintenance Manual.
- .5 Obtain receipt for delivered products and submit prior to final payment.

1.10 SPECIAL TOOLS

- .1 Provide special tools, in quantities specified in individual specification section.
- .2 Provide items with tags identifying their associated function and equipment.
- .3 Deliver to location as directed by *NCC Representative*; place and store.
- .4 Receive and catalogue items. Submit inventory listing *NCC Representative*. Include approved listings in Maintenance Manual.

1.11 STORAGE, HANDLING AND PROTECTION

- .1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.
- .2 Store in original and undamaged condition with manufacturer's seal and labels intact.
- .3 Store components subject to damage from weather in weatherproof enclosures.
- .4 Store paints and freezable materials in a heated and ventilated room.
- .5 Remove and replace damaged products at own expense and to satisfaction of *NCC Representative*.

1.12 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, to *NCC Representative* approval.
- .3 Warranty management plan to include required actions and documents to assure that the NCC 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 *NCC Representative* for approval prior to each monthly pay estimate.
- .6 Assemble approved information in binder and submit upon acceptance of work. 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 ten] (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 NCC's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
- .8 Conduct joint 4 month and 9 month warranty inspection, measured from time of acceptance, by *NCC Representative*.
- .9 Include information contained in warranty management plan as follows:
 - .1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, subcontractors, manufacturers or suppliers involved.
 - .2 Listing and status of delivery of Certificates of Warranty for extended warranty items, to include roofs, HVAC balancing, pumps, motors, transformers and commissioned systems such as fire protection, alarm systems, sprinkler systems, lightning protection systems.
 - .3 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.
 - .4 Contractor's plans for attendance at 4 and 9 month post-construction warranty inspections.
 - .5 Procedure and status of tagging of equipment covered by extended warranties.
 - .6 Post copies of instructions near selected pieces of equipment where operation is critical for warranty and/or safety reasons.
- .10 Respond in a timely manner to oral or written notification of required construction warranty repair work.
- .11 Written verification will follow oral instructions. Failure to respond will be cause for the *NCC Representative* to proceed with action against Contractor.

1.13 PRE-WARRANTY CONFERENCE

- .1 Meet with *NCC Representative*, to develop understanding of requirements of this section. Schedule meeting prior to contract completion, and at time designated by *NCC Representative*.
- .2 *NCC Representative* will establish communication procedures for:
 - .1 Notification of construction warranty defects.
 - .2 Determine priorities for type of defect.
 - .3 Determine reasonable time for response.

- .3 Provide name, telephone number and address of licensed and bonded company that is authorized to initiate and pursue 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.

1.14 WARRANTY TAGS

- .1 Tag, at time of installation, each warranted item. Provide durable, oil and water resistant tag approved by *NCC Representative*.
- .2 Attach tags with copper wire and spray with waterproof silicone coating.
- .3 Leave date of acceptance until project is accepted for occupancy.
- .4 Indicate following information on tag:
 - .1 Type of product/material.
 - .2 Model number.
 - .3 Serial number.
 - .4 Contract number.
 - .5 Warranty period.
 - .6 Inspector's signature.
 - .7 Construction Contractor.

2. Products

NOT USED

3. Execution

NOT USED

END OF SECTION

1. General

1.1 CONDITIONS

- .1 All General Requirements, Additional General Requirements, section 01 00 00, and all Addenda are an integral part of this section.
- .2 This section and the related drawings must be examined and read jointly with specification sections and drawings relative to other antecedent, subsequent, complementary, subordinate or otherwise related to work described herein.

1.2 SECTION INCLUDES

- .1 Contractor to supply all products, materials, tools, equipment, labour and services required for the complete execution of the work described in this section and/or shown on drawings, so that the completed work entirely fulfils the ends for which they are intended.
- .2 Are included all accessories, sundries and miscellaneous minor work not necessarily or specifically described in the specifications or shown on drawings but which are essential to the complete and good execution of the work in accordance with the quality standards cited in reference and/or recognized in the industry and in compliance with recognized best practices.
- .3 Works described in this section include new foundation drainage and insulation as well as all related excavations and backfill work.

2. Products

2.1 MATERIALS

- .1 Below Grade insulation boards : extruded polystyrene boards (PSX) to CAN/ULC S701, Type : 4.
 - .1 compression resistance : 210 kPa .
 - .2 thickness: 50mm
 - .3 Dimensions : 1200 mm x 2400 mm
 - .4 Shiplap edges
 - .5 Acceptable Product : FOAMULAR C-300 by Owens-Corning FOAMULAR C-300 or approved equivalent.
- .2 19.0 mm Type I Clearstone to OPSS1004.
- .3 150 mm perforated drain; Big O with filter sock, or approved equivalent.
- .4 Geotextile : . non woven synthetic fibre fabric, supplied in rolls, composed of minimum 85% by mass of polypropylene or polyester.
 - .1 Thickness: to CAN/CGSB 148.1, No.3, minimum 7,0 mm.
 - .2 Grab tensile strength and elongation: to CAN/CGSB 148.1, No.7.3.
 - .3 Filtration opening size (FOS): to CAN/CGSB 148.1 No.10
- .5 Drainage board : composite drainage system consisting of a three-dimensional, crush-proof, drainage core and a, non-woven, non-needled geotextile fabric.
 - .1 Acceptable product: Hydrodrain 400 type panel by Hydrotech Membranes Corp., or approved equivalent

3. **Execution**

3.1 **EXCAVATION**

- .1 Excavation shall be sloped at 1:1 or as approved by Contractor's geotechnical engineer. Contractor shall protect against any erosion of sub-grade
- .2 Stockpile native soil. Native soil to be used for backfilling.
 - .1 Stockpile in locations as directed by NCC Representative. Stockpile height not to exceed 2,0 m.
 - .2 Protect stockpiles from compaction.

3.2 **PREPARATION/PROTECTION**

- .1 Locate existing buried services prior to excavation.
- .2 Protect excavations from freezing.
- .3 Where excavations are based above water table, keep excavations clean, free of standing water, and loose soil.
- .4 Where excavations extend below water table in soil, provide adequate peripheral and bottom soil support and excavation procedures designed to prevent the ingress of soil under water pressure from reducing the load capacity of the bearing strata.
- .5 Protect buried services that are required to remain undisturbed.
- .6 Protect existing buildings and surface features which may be affected by work from damage while work is in progress and repair damage resulting from work.

3.3 **DRAINAGE**

- .1 Install new 150 mm Big O drain with filter sock, or approved equivalent, along base of foundation wall. Refer to drawing S-05. Provide minimum 0.2% slope.
- .2 Install 19.0 mm Type I clearstone, or approved equivalent, minimum 600 mm in height, as is shown on drawing S-05. Install filter cloth or geotextile around clearstone as shown on drawing.

3.4 **BACKFILLING**

- .1 Inspection: do not commence backfilling until fill material and spaces to be filled have been inspected and approved by NCC Representative.
- .2 Remove snow, ice, construction debris, organic soil and standing water from spaces to be filled.
- .3 Lateral support: maintain even levels of backfill around structures as work progresses, to equalize earth pressures.
- .4 Contractor to follow their Engineer's recommendations with regards to maximum lift depth and required compaction to ensure that soil does not settle after completion.
- .5 Provide 150 mm of clean soil as top layer. Refer to Section 32 91 19 for topsoil requirements.

3.5 **SODDING**

- .1 Reinstall sod to match existing.
- .2 Water newly reinstated sod and protect to ensure growth.

3.6 **GRADING**

- .1 Grade soil so that water will drain away from walls.

3.7 FINISH GRADING

- .1 Testing of new materials will be carried out by testing agency retained by Contractor.
- .2 Not later than one week before backfilling or filling, provide to designated testing agency, samples of backfill.
- .3 Do not begin backfilling or filling operations until material has been approved for use by testing agency.

3.8 SHORTAGE AND SURPLUS

- .1 Supply necessary fill to meet backfilling and grading requirements and with minimum and maximum rough grade variance.
- .2 Dispose of surplus material off site.
 - .1 Contractor to retain Consultant to provide chemical testing of surplus contaminated native soil to characterize the soil and determine appropriate disposal.
 - .2 Contractor to submit proof of all disposal to NCC Representative.

3.9 CLEANING

- .1 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

1. General

1.1 REFERENCE STANDARDS

- .1 Do cast-in-place concrete work in accordance with CAN/CSA-A23.1-04, and testing in accordance with CAN/CSA-A23.2-04, except where specified otherwise.
- .2 Conform to National Building Code, NBCC 2010.

2. Products

2.1 MATERIALS

- .1 Portland cement: to CAN/CSA-A5-93, Type GU (Type 10).
- .2 Slag cement: cementitious hydraulic slag, to CAN/CSA-A363-M88.
- .3 Water, fine aggregates, normal density coarse aggregates: to CAN/CSAA23.1.
- .4 Air entraining admixture: to CAN3-A266.1-M78 and ASTM C260-86.
- .5 Chemical admixtures: to CAN3-A266.2-M78.
- .6 Pozzolanic mineral admixtures: to CAN3-A266.3-M86.
- .7 Superplasticizing admixtures: to CAN/CSA A266.5-M1981.
- .8 Non-shrink grout: premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents, of pouring consistency, capable of developing compressive strength of 50 MPa at 28 days.
- .9 Dry Pack: compound consisting of non-metallic aggregate, cement and sufficient water for the mixture to retain its shape when made into a ball by hand and capable of developing compressive strength of 35 MPa at 28 days.
- .10 Fiber Reinforcing: to be 100% virgin polypropylene.

2.2 CONCRETE MIXES

- .1 Proportion normal density concrete to CAN/CSA-A23.1, Clause 14. Slab on grade to have fiber reinforcing at a rate of 900g/m³.
- .2 Provide certification that plant, equipment, and all materials to be used in concrete comply with requirements of CAN/CSA-A23.1.
- .3 Provide certification that mix proportions selected will produce concrete of specified quality and yield and that strength will comply with CAN/CSAA23.1, Clause 4.
- .4 Slag cement in combination with normal Portland cement to a maximum of 25% may be used, upon approval.
- .5 Obtain Engineer's consent before using chemical admixtures.
- .6 Use of calcium chloride not permitted.
- .7 Do not add water to mix on site.

3. **Execution**

3.1 **WORKMANSHIP**

- .1 Obtain Engineer's review of reinforcing placement before placing concrete. Provide 24 hrs. notice prior to placing of concrete. In slab construction, ensure that all bottom steel and at least 66% of top steel is in place and inspected before commencing concrete placement.
- .2 Place concrete in accordance with CAN/CSA-A23.1.
- .3 Ensure that reinforcement and inserts are not disturbed during concrete placement.
- .4 Prior to placing of concrete in adverse weather, obtain Engineer's review of proposed method for protection during placing and curing.
- .5 Maintain accurate records of poured concrete items to indicate date,
- .6 location of pour, quality, air temperature and test samples taken.

3.2 **FINISHING**

- .1 Finish concrete to CAN/CSA-A23.1.
- .2 Rub exposed sharp edges of concrete with carborundum to produce 3mm radius edges unless otherwise detailed.

3.3 **3.3 DEFECTIVE CONCRETE**

- .1 Remove defective concrete, blemishes and embedded debris and repair as directed by Engineer.

3.4 **3.4 INSPECTION AND TESTING**

- .1 Contractor is to provide a minimum of 24 hours notice for any site review or testing work on this project.
- .2 A concrete testing laboratory will be retained by the Contractor and paid for under a cash allowance to conduct concrete tests for each pour and/or for each 12 cubic meters of concrete. Testing at the time of concrete placement shall include measurement of slump in accordance with CAN/CSA A23.2-04. Testing of cured concrete specimens shall consist of 3 lab cured cylinders and 2 site cured cylinders. The cylinder testing shall conform to CAN/CSA A23.2-04.
- .3 If tests indicate failure to meet strength, slump, rate of hardening requirements, or if surface finish is unacceptable, Consultant may require corrective measures as per CAN/CSA A23.1-04.

3.5 **3.5 WINTER PROTECTION**

- .1 Carry out winter concreting in strict accordance with CAN/CSA-A23.1, Clause 7.4.1.8.
- .2 Do not use un-vented heaters.

3.6 **3.6 HOT WEATHER PROTECTION**

- .1 Carry out hot weather concreting in accordance with CAN/CSA-A23.1, Clause 5.2 and 7.4, including use of approved moisture retention film, if applicable.

END OF SECTION

Reference No.: M031800-A1

Gatineau, October 17, 2013

Mr. Derek Mes, P. Eng.
Adjeleian Allen Rubeli Limited
1005-75 Albert St.
Ottawa (Ontario) K1P 5E7

Re : Geotechnical Opinion
Gilmour Hughson Building
350, Laurier Street, Gatineau, Quebec

Dear Mr. Mes:

Inspec-Sol Inc (Inspec-Sol) was retained by Adjeleian Allen Rubeli Limited to carry out a site visit and provide comments from a geotechnical engineering viewpoint on the foundation support of the Gilmour Hughson Building. We understand that the owners of the building, the National Capital Commission (NCC) are planning renovations for it. Inspec-Sol comments were to be based upon visual observations from a site walkover of the Gilmour Hughson Building and our review of a building review report by Adjeleian Allen Rubeli Limited (AAR Reference No. 5492-00, dated August 26, 2013). That report indicated that geotechnical recommendations were required for the bearing walls condition and rectification, as well as for a pad footing that would support a new column.

The Gilmour Hughson Building is located at the north end of Laurier Street, in Gatineau, Quebec, on a peninsula at the junction of the Brewery Creek and the Ottawa River. It is a patrimonial building that's property of the National Capital Commission (NCC); its walls consist of stone masonry supporting a wood beam structure.

1.0 BRIEF BUILDING DESCRIPTION

A site visit was conducted on September 12, 2013 by the undersigned, in company of Mr. Derek Mes of Adjeleian Allen Rubeli Limited, structural engineers and Tom Laverty representing the National Capital Commission (NCC), who are the owners of the building.

The basement floor was observed to be an 'earth floor' that consisted of sand. We completed two (2) shallow hand shovel excavations which found the sand had a depth greater than 500 mm.

The foundation walls, that consisted of stone masonry and had no obvious spread footing, were founded within the sand. The base of the wall matched the level of the 'earth floor' and was observed to have deteriorated mortar within the stone wall matrix and voids within or immediately below the base of the stone wall.

Borehole logs from previous environmental characterizations of the Jacques Cartier Park and provided to Inspec-Sol by the NCC, indicate that this sand may be about 2 m thick and overlie a native silty clay. The sand is possibly a fill material. Also, based on the observation wells still accessible on site, a water level was measured to be deeper than 3 m below the base of the wall.

It was also observed that:

- ◆ A slab was poured along the south foundation wall; after knocking on this slab, a void is anticipated below that slab.
- ◆ At the south-east corner of the building, local areas of "underpinning" with concrete below the bearing stones seem to have been attempted in the past.
- ◆ At some locations, the basement floor is slightly lower than the bearing walls.

2.0 COMMENTS AND GEOTECHNICAL OPINION

The voids observed within or below the base of the bearing walls, may have been caused by a wash out of the sand, due to poor peripheral drainage and the earth floor grade being lower than the base of the stone wall. We understand that NCC and their architect consultant has already decided that the exterior perimeter drainage issue will be corrected [REDACTED] and a perimeter drainage tile system on the outside the building, near the base of the stone wall.

We recommend that during the progress of the exterior drainage work, that additional visits be completed by geotechnical personnel to observe and comment on the condition and presence of voids below the bearing walls from the outside.

In addition, due to the lack of a spread footing and the deteriorated condition of the mortar, it is recommended that no excavation is carried lower than the level of the based of the stone wall and that temporary lateral support be considered.

The following additional options are provided:

[REDACTED]

[REDACTED]

[REDACTED] Pour a concrete slab-on-grade: Pour a concrete floor with thickened perimeter of the floor [REDACTED] ensuring that the floor level is higher than the footing base. Preparation work should also include repairs to any 'washout' or voids similar to Option 2

[REDACTED]

New pad footing

A new pad footing is planned at the south end of the center wood beam that supports the building's first floor.

Here are our comments for this new pad footing:

- ◆ The new pad footing should not rest directly on the existing concrete slab, as voids seem to be present underneath it at that precise location. The concrete slab should be removed and the footing placed directly on the sandy soils below.
- ◆ The existing sand is possible fill and the settlement performance of the building is unknown. Therefore the bearing capacity for the proposed pad footing is difficult to provide even if a complete geotechnical investigation would be conducted, to verify the sandy fill's compactness.
- ◆ Considering the rest of the building relies directly on the sandy fill and has been in place for some unknown but extended period of time, we recommend that the bearing pressure be limited to 75 kPa and that the proposed steel column should be replaced by an adjustable steel jack. This will allow the steel jack to be monitored and maintained in a "snug" condition by periodic adjustment if found to be necessary. When the area of the pad is prepared, a compactive effort with a "jumping jack" type compactor be used to locally compact the sand prior to the pouring of the concrete footing pad.

We trust this geotechnical opinion is to your satisfaction and meets your present requirements. Please do not hesitate to contact us, should any questions arise.

Yours very truly,

INSPEC-SOL INC.



David Beauseigle, ing.



Joseph B. Bennett, P. Eng.

JBB/vl

Copy via email: Mr. Derek Mes – (dmes@aar.on.ca)

1. General

1.1 CONDITIONS

- .1 All General Requirements, Additional General Requirements, section 01 00 00, and all Addenda are an integral part of this section.
- .2 This section and the related drawings must be examined and read jointly with specification sections and drawings relative to other antecedent, subsequent, complementary, subordinate or otherwise related to work described herein.

1.2 SCOPE OF WORK

- .1 Contractor to supply all products, materials, tools, equipment, labour and services required for the complete execution of the work described in this section and/or shown on drawings, so that the completed work entirely fulfils the ends for which they are intended.
- .2 Are included all accessories, sundries and miscellaneous minor work not necessarily or specifically described in the specifications or shown on drawings but which are essential to the complete and good execution of the work in accordance with the quality standards cited in reference and/or recognized in the industry and in compliance with recognized best practices.
- .3 Works described in this section includes but is not limited to :
 - .1 preparation of masonry surfaces for repointing work
 - .2 filling of cavities behind interior and exterior stone masonry units.
 - .3 Raking all joints.
 - .4 Repointing all interior and exterior joints, including backpointing and finish pointing.
 - .5 Removal of loose portions on stone surface.
 - .6 Consolidation of masonry units at wall openings, between wythes and at wall angles.
 - .7 Preparation of surfaces to receive application of parging on the entire exposed surface of foundation walls that are to receive liquid-applied waterproofing membrane.
 - .8 Application of parging mortar.

1.3 RELATED WORK

- .1 Section 04 03 42 – Replacement of Stone
- .2 Section 04 05 19 - Masonry Anchorage and Reinforcing

1.4 DEFINITIONS

- .1 Raking: the removal of loose/deteriorated mortar until sound mortar is reached up to the full depth of the stone, i.e. 200mm, or the removal of sound mortar, 50 mm minimum deep.
- .2 Tooling: finishing of masonry joints using tool to provide final contour.
- .3 Consolidation: strengthening masonry units to prevent deterioration.
- .4 Descaling: the removal of loose portions of the masonry (usually spalled area) through impact with a brush hammer or similar device.
- .5 Backpointing : filling of masonry joints from which mortar has been raked out to a depth of more than 50mm.
- .6 Finish Pointing : filling and finishing of masonry joints from which mortar has been raked to a depth of 50mm and or where backpointing work has been executed.

1.5 SUBMITTALS

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

1.6 QUALIFICATIONS

- .1 Masonry Contractor:
 - .1 Use single Masonry Contractor for all masonry work.
 - .2 Masonry contractor to have 10 years experience minimum in historic stone masonry work.
 - .3 Masonry contractor to have good level of understanding of structural behaviour of masonry walls when masonry work involves replacing or repairing stones which are part of structural masonry work.
- .2 Masons:
 - .1 Mason to have certificate of qualification with 5 years minimum experience in historic stone masonry work.
 - .2 Superintendent: Mason to have certificate of qualification with 10 years minimum experience in historic stone masonry work.
 - .3 Masons to have proof of license certification for propriety restoration mortars.
- .3 Obtain approval from *NCC Representative* for changes to qualified personnel.

1.7 MOCK-UPS

- .1 Construct mock-up in accordance with Section 01 45 00 - Quality Control.
- .2 Construct mock-up 1 m x 1 m to demonstrate procedure for the type of masonry material specified. The shape of the joints must be similar to those rebuilt in 2009 (West two storey wall,)
- .3 Construct mock-up under supervision of *NCC Representative* to demonstrate a full understanding of specified procedures, techniques and formulations are achieved before work commences.
- .4 Construct mock-up shall be executed as indicated on drawing.
- .5 Allow 72 hours for inspection of mock-up by *NCC Representative* before proceeding with masonry repointing and repair work.
- .6 When accepted, mock-up will demonstrate minimum standard for this work. Mock-up may remain as part of finished work.

1.8 EXISTING CONDITIONS

- .1 Examine site and review all information pertaining to existing conditions likely to affect the proper execution of the *Work*.
- .2 Claims for additional compensation will not be entertained for labor or *material* required to complete the *Work* that could have been reasonably ascertained by site examination and review of existing conditions.
- .3 The Contractor shall also obtain, from the NCC, the relevant information about the restrictions and constraints applicable to:
 - .1 The access to and organization of the site, location of hauling and handling equipment, handling and / or storage of materials and equipment, etc..;
 - .2 The coordination of the schedule and the sequence of work with the progress of work done by other contractors if appropriate;
 - .3 Any other information which, in the opinion of the Contractor, may affect the scope, value or any other aspect of the work included in the contract.

- .4 Report in writing, to *NCC Representative* areas of deteriorated masonry revealed during work. Obtain *NCC Representative* approval and instructions of repair and replacement of masonry units before proceeding with repair work.

1.9 AMBIENT CONDITIONS

- .1 Maintain masonry temperature between 10 degrees C and 25 degrees C for duration of work.
- .2 To allow for proper drying of the foundation walls prior to repointing work, provide if required mechanical fans.
- .3 For the entire duration of the work, contractor shall take all measures necessary to protect walls from weather. Obtain the *NCC Representative* approval of heated enclosure and protection of works.

2. Products

2.1 MATERIALS

- .1 Mortar: in accordance with Section 04 03 08 - Mortar
- .2 Replacement stone:: in accordance with Section 04 03 42 –Replacement of stone

3. Execution

3.1 PREPARATION

- .1 Review and attest the scope of work. Record and submit information to *NCC Representative*.
- .2 Obtain *NCC Representative* written approval and instructions for replacement of masonry units before proceeding with work.

3.2 RAKING JOINTS

- .1 Use a chisel to remove mortar. Ensure that no masonry units are chipped, altered or damaged by work to remove mortar
- .2 Remove mortar of all joints. Remove the deteriorated mortar or loose mortar, dirt and other undesirable material.
- .3 Remove the full depth of deteriorated mortar to sound mortar or to the full depth ($\pm 200\text{mm}$) of stone masonry units but in no case less than 50 mm leaving square corners and a flat surface at back of cut. Clean out voids and cavities encountered.
- .4 Clean by compressed air the surfaces of joints without damaging texture of exposed joints or masonry units.
- .5 Flush open joints and voids; clean open joints and voids with low pressure water and if not free draining blow clean with compressed air.
- .6 Leave no standing water.

3.3 REPLACEMENT OF STONE

- .1 Advise *NCC Representative* once raking is complete. Mark-up stones to replace in the presence of the *NCC Representative* Record and submit information to *NCC Representative*.
- .2 Remove stone to be replaced. Do not damage existing Work.

- .3 Advise *NCC Representative* of cavities discovered behind removed stones and suspend work until directives from *NCC Representative* are received..
- .4 Perform the replacement of stone in accordance of 04 03 42.

3.4 DESCALING

- .1 Remove any loose masonry as per *NCC Representative's directions* with a bush hammer..
- .2 Mark-up rubbles to replace. Record and submit information to *NCC Representative*.

3.5 BACKPOINTING

- .1 Fix dislodged masonry units in correct location with softwood wedges.
- .2 Insert and compress firm mortar to eliminate voids in successive layers on the full depth of the raked joints to within 50 mm of the face masonry. Do not tool surface smooth, the exposed edge must remain rough.
- .3 Protect the work in accordance with article 3.10 of this section and let mortar harden for at least one (1) week until initial mortar shrinkage is done prior to undertaking finish pointing work.
- .4 Pull out wood wedges when dried and shrunken and fill gaps with backpointing mortar..

3.6 CONSOLIDATION OF MASONRY

- .1 If required remove element under supervision of *NCC Representative*.
- .2 Undertake the work in accordance of 04 05 19 - MASONRY ANCHORAGE AND REINFORCING and as indicated in structural drawings.
- .3 Reinstall removed element into work and repoint with specified mortar. Joints to match existing.

3.7 FINISH POINTING:

- .1 Execute the repointing of mortar joint after replacement of stone have been made in accordance with section 04 03 42 and backpointing work is complete..
- .2 Allow wall to dry before proceeding with repointing work. Use fans if natural air circulation is insufficient to dry stone units..
- .3 Dampen joints.
- .4 Keep masonry damp while and after pointing is being performed in accordance with standards.. Ensure that the stone is not saturated with water.
- .5 Completely fill joint with mortar. If surface of masonry units has worn rounded edges keep pointing back from surface to keep same width of joint. Avoid feather edges. Pack mortar solidly into voids and joints.
- .6 Tool and compact using jointing tool to force mortar into joint.
- .7 Build-up pointing in layers not exceeding 12 mm in depth.
- .8 Allow each layer to set before applying subsequent layers.
- .9 Unless otherwise directed, tool joints to match existing profile in contiguous work.
- .10 Remove excess mortar from masonry face before it sets.
- .11 Use repointing tools appropriate to the work and of a type approved by *NCC Representative* to achieve firmly compacted joints.

3.8 PREPARATION OF SURFACES APPLICATION OF PARGING MORTAR

- .1 Before proceeding with foundation wall parging mortar work, assure that all repointing and unit replacement work is complete.
- .2 Assure that the setting or repointing mortar has completed its initial cure.
- .3 Apply parging on the entire surface of the foundation wall to 50mm below finish grade.
- .4 Apply parging in two layers each of 6mm minimum and 10mm maximum thickness to a total minimum 12mm and maximum 20mm thickness. Do not trowel smooth surfaces which must remain rough to facilitate the adhesion of the second parging coat and of the waterproofing membrane. If necessary, use a coarse, hard, non-metallic bristle brush to achieve the appropriate texture.
- .5 Ensure that the initial set of the first layer is complete before applying the second layer. Lightly dampen the first layer prior to applying the second layer.
- .6 Execute parging work to obtain a regular surface free from cavities, ridges and protrusions.

3.9 CLEANING

- .1 Clean surfaces of mortar droppings, stains and other blemishes resulting from work of this contract as work progresses.
- .2 Remove droppings and splashing using clean sponge and water.
- .3 Do further cleaning using stiff natural bristle brushes after mortar has obtained its initial set and has not fully cured.
- .4 Clean masonry only if mortar has fully cured.
- .5 Clean masonry with plain water and soft natural bristle brush.
- .6 Obtain approval of *NCC Representative* prior to using other cleaning methods for persistent stains.

3.10 PROTECTION OF COMPLETED WORK

- .1 Cover completed and partially completed work not enclosed or sheltered at end of each work day.
- .2 Cover with waterproof tarps to prevent weather from eroding recently repointed material.
 - .1 Maintain tarps in place for minimum of 3 days after repointing.
 - .2 Ensure that bottoms of tarps permit airflow to reach mortar in joints to permit carbonation of mortars.
- .3 Anchor coverings securely in position.
- .4 Install and maintain wetted burlap protection during the curing process:
 - .1 Minimum three (3) days in summer.
 - .2 Minimum thirty (30) days in cold weather conditions using dry heated enclosures.
- .5 Wet mist burlap only - ensure no direct spray reaches surface of curing mortar.
- .6 Shade areas of work from direct sunlight during periods over 25 degrees C, and maintain constant dampness of burlap.
- .7 Maintain ambient temperature of 10 degrees C for minimum of 3 days after repointing masonry.

3.11 QUALITY CONTROL

- .1 Visual approval
 - .1 At a distance of 6 meters of the wall, no irregularities or dimensional changes in mortar joints shall be visible according to CAN3-A371, section 5.17, Note #3.
 - .2 Shape and size of mortar joints, as well as uniformity and distribution of the color of the masonry elements shall be such that the result provides regularity throughout work.

END OF SECTION

1. **General**

1.1 **CONDITIONS**

- .1 All General Requirements, Additional General Requirements, section 01 00 00, and all Addenda are an integral part of this section.
- .2 This section and the related drawings must be examined and read jointly with specification sections and drawings relative to other antecedent, subsequent, complementary, subordinate or otherwise related to work described herein.

1.2 **SECTION INCLUDES**

- .1 Contractor to supply all products, materials, tools, equipment, labour and services required for the complete execution of the work described in this section and/or shown on drawings, so that the completed work entirely fulfils the ends for which they are intended.
- .2 Are included all accessories, sundries and miscellaneous minor work not necessarily or specifically described in the specifications or shown on drawings but which are essential to the complete and good execution of the work in accordance with the quality standards cited in reference and/or recognized in the industry and in compliance with recognized best practices.
- .3 This section described in particular the requirements relative but not limited to
 - .1 Supply and preparation of repointing mortar, including drypack method backpointing mortar;
 - .2 Supply and preparation of setting mortar for new stone masonry units;
 - .3 Supply and preparation of parging mortar for foundation walls

1.3 **ALTERNATES**

- .1 Obtain *NCC Representative* approval before changing manufacturer's brands or sources of supply of mortar materials during entire contract or other methods of mixing mortar specified elsewhere in this specification.

1.4 **DESIGN/PERFORMANCE REQUIREMENTS**

- .1 Mortar compressive strength minimum 1.0 Mpa at 7 days and minimum 3.0 MPa at 28 days.
- .2 Mortar materials that do not have the required compressive strength after 7 days but which meet the required value after 28 days will be considered acceptable. The contractor may, at his own risk, choose either to continue with the work and leave in place mortars whose compressive strength achieves at least 66% of the required value after 7 days pending the achievement of the required value after 28 days or immediately replace the defective work and materials.

1.5 **SAMPLES**

- .1 Provide samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide four (4) samples of coloration of mortar.

1.6 **TESTING STANDARDS**

- .1 Provide testing reports in accordance with Section 01 33 00 Submittal Procedures.
- .2 Provide laboratory test results, which attest that the product meets the requirements outlined within specification.

1.7 VERIFICATION OF SITE CONDITIONS

- .1 Identify the structural weaknesses and failures that may cause problems and report them before starting masonry work.
- .2 Verify and examine joints and determine method to reproduce joints, and submit samples for approval prior to start mortaring.
- .3 Examine horizontal and vertical joints to determine which were struck first and whether they are same style, as well as aspects of workmanship which establish authenticity of original work.
- .4 The colour of mortar for interior and above-grade exterior joints shall be to match that of existing mortar joints on the East elevation.

1.8 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store, handle and protect materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Keep material dry. Protect from weather, freezing and contamination.
- .3 Ensure that manufacturer's labels and seals are intact upon delivery.
- .4 Remove rejected or contaminated material from site.

1.9 SITE CONDITIONS

- .1 Weather Requirements: CAN/CSA A371 or International Masonry Industry All-Weather Council (IMIAC) - Recommended Practices and Guide Specifications for Hot and Cold Weather Masonry Construction.
- .2 Execute work in accordance with Section 04 03 07 – Masonry Repointing and Mortar Parging

2. Products

2.1 MATERIALS

- .1 Water: potable, clean and free from contaminants.
- .2 Mortars : dry, factory premixed.
- .3 Backpointing drypack method and joint repointing : to CSA A-179
 - .1 Characteristics Results obtained in laboratory at 23°C.
 - .1 Compressive strength: 4.5 MPa (28 days)
 - .2 Vapour transmission: 24 perms
 - .3 Water absorption: 125g/100cm² (24 hours)
 - .4 Shrinkage: 0.10% (91 days)
 - .5 Flexural strength,: 1,2 MPa (28 days)
 - .6 Freeze/thaw resistance 60 cycles
 - .7 Pull-off adhesion: 0.21 MPa (après 28 days)
 - .2 Acceptable material: XHN-60 manufactured by Daubois or approved equivalent.
- .4 Setting mortar : to set replacement stone units and for filling cavities behind replaced stone units:
 - .1 Characteristics Results obtained in laboratory at 23°C.
 - .1 Compressive strength: min 5,0 MPa / average 6,5 MPa (28 days)
 - .2 Vapour transmission: 20 perms
 - .3 Water absorption: 118g/100cm² (24 hours)
 - .4 Shrinkage: 0.13% (91 days)
 - .5 Flexural strength,: 1,7 MPa (28 days)

- .6 Freeze/thaw resistance > 50 cycles
- .7 Pull-off adhesion: 0.21 MPa (après 28 days)
- .2 Acceptable material: Bétomix Plus type N manufactured by Daubois ou approved equivalent.
- .5 Parging mortar for foundation walls : type N to CAN/CSA A179.:
 - .1 Acceptable material: Bétomix Plus type N manufactured by Daubois ou approved equivalent.

2.2 MORTAR MIXING

- .1 Use pre-blended, pre-coloured mortar prepackaged under controlled factory conditions. Ingredients batching limitations to be within 1% accuracy.
- .2 Mix mortar ingredients in accordance with CAN/CSA A179 in quantities needed for immediate use.
- .3 Maintain sand uniformly damp immediately before mixing process.
- .4 Use a batch type mixer in accordance with CAN/CSA A179.
- .5 Pointing mortar: prehydrate pointing mortar by mixing ingredients dry, then mix again adding just enough water to produce damp unworkable mix that will retain its form when pressed into ball. Allow to stand for not less than 1 hour no more than 2 hours then remix with sufficient water to produce mortar of proper consistency for pointing.
- .6 Re-temper mortar only within two hours of mixing, when water is lost by evaporation.
- .7 Use mortar within 1½ hours after mixing at temperatures of or above 25° C, or 2½ at temperatures below 25° C. Discard mortar mixed that is not used within the prescribed times.

3. Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 QUALITY CONTROL

- .1 Use mixing method, which is appropriate to the work undertaken.
- .2 Do not mix less than one bag to ensure accurate proportioning of materials.
- .3 Verify and record the mixing time of each batch.
- .4 For each wall and two periods during the work, provide two (2) samples of all types of mortars specified for testing purposes.
- .5 Before starting work, obtain *NCC Representative* and manufacturer's representative approval about the mixing method and the consistency of mortar.

END OF SECTION

1. **General**

1.1 **CONDITIONS**

- .1 All General Requirements, Additional General Requirements, section 01 00 00, and all Addenda are an integral part of this section.
- .2 This section and the related drawings must be examined and read jointly with specification sections and drawings relative to other antecedent, subsequent, complementary, subordinate or otherwise related to work described herein.

1.2 **SECTION INCLUDES**

- .1 Contractor to supply all products, materials, tools, equipment, labour and services required for the complete execution of the work described in this section and/or shown on drawings, so that the completed work entirely fulfils the ends for which they are intended.
- .2 Are included all accessories, sundries and miscellaneous minor work not necessarily or specifically described in the specifications or shown on drawings but which are essential to the complete and good execution of the work in accordance with the quality standards cited in reference and/or recognized in the industry and in compliance with recognized best practices.
- .3 This section described in particular the requirements relative to :
 - .1 Removal of stone masonry units, including related mortar joints;
 - .2 Supply and installation of replacement stone masonry units, including setting and pointing mortar work.
 - .3 Filling of wall cavities behind replaced stone units, including mortar and stones.

1.3 **SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide samples of replacement stones after awarding the contract but at least five (5) days before masonry work begins.
 - .1 Two (2) cut stones sized and dressed to match existing stone units.
 - .2 Select samples from currently worked bed of quarry and accompanied by quarry certification.

1.4 **QUALITY ASSURANCE**

- .1 Allow *NCC Representative* access to mason's workshop for inspection of current work-in-progress.
- .2 Execute work by experienced personnel in preservation of historic masonry in accordance to Section 04 03 07 – Masonry Repointing and Mortar Parging.

1.5 **EXISTING CONDITIONS**

- .1 During the bidding period, the Contractor will be responsible for taking all the means it deems necessary to recognize for themselves the extent and nature of the work carried out in the present conditions.
- .2 No extra application shall be received for work that could reasonably be recognized in a careful inspection of the premises during the bidding period by persons skilled in such work.
- .3 The Contractor shall also obtain, from the NCC, the relevant information about the restrictions and constraints applicable to:
 - .1 The access to and organization of the site, location of hauling and handling equipments, handling and / or storage of materials and equipment, etc.;

- .2 The coordination of the schedule and the sequence of work with the progress of work done by other contractors if appropriate;
- .3 Any other information which, in the opinion of the Contractor, may affect the scope, value or any other aspect of the work included in the contract.
- .4 Stone masonry units to be replaced will have been marked on site prior to the work (see section 04 03 07).

2. Products

2.1 STONES

- .1 Limestone: to ASTM C568, category III - High Density.
 - .1 Acceptable Products:
 - .1 Rubble Stones : Pierre calcaire de Joliette – Ste-Élisabeth or approved equivalent.
 - .2 Roughly cut stone as per the dimensions of the stone to replace.
 - .3 Size and dress stone to match existing stone units.
 - .4 Characteristics.
 - .1 Supply stone which have been extracted at least 3 metres under currently worked bed of quarry..
 - .2 Seasonable Stone is unacceptable.
 - .3 Previously quarried stone or recuperated stone is unacceptable.
 - .4 Submit certification of quarry with each delivery stone.

2.2 MORTAR

- .1 Setting mortar : to set replacement stone units and for filling cavities behind replaced stone units : to specifications of Section 04 03 08 – Mortars.
- .2 Mortar joints : backpointing, applied by the drypack method and finishing mortar ± 50 mm thickness, to specifications of Section 04 03 08 – Mortars.

3. Execution

3.1 PREPARATION

- .1 Mark-up stone to replace. Record and submit information to *NCC Representative* .
- .2 Obtain *NCC Representative* approval and instructions for repair and replacement of masonry units before proceeding with repair work.
- .3 Move and lift stone units using means to prevent damage. Submit stone units dropped or impacted to *NCC Representative* for inspection and approval. Do not make holes or indentations for Lewises or dogs on face or top side of stone.
- .4 Indicate bedding planes of stone units. Duplicate bedding marks on usable pieces of cut stone.
- .5 Place safety devices and signs near work area.
- .6 Install and remove shoring or other supports as required.
- .7 Install and remove self-supporting scaffolding in accordance with Section 01 52 00 - Construction Facilities.
- .8 Cover adjacent plant material and fragile surfaces.

3.2 STONE REMOVAL

- .1 Rake out mortar joints of stones. Ensure that no masonry units are chipped, altered or damaged by work.
- .2 Clean dust, mortar and stone fragments from slot.

3.3 CUTTING/SIZING OF STONE

- .1 Use calipers, squares and levels to measure hole for new stone. Allow for mortar joints of 15 to 40 mm thickness. Match size and texture of the existing stones. Refer to northeast section of building for reproducing the masonry pattern.
- .2 Provide 1:10 slope on top face of stone unit, sloping down to front face.

3.4 MOVING STONES

- .1 Use Lewises or other similar devices to lift stones to working level.
- .2 Move stones horizontally in wheelbarrows or on carts.
- .3 Slide stones into place on wood ramps.
- .4 Protect edges of stone from damage when hoisting and lifting from position. Use separators or wood shims to isolate units from hoisting belts.
 - .1 Incorporate only undamaged stone in Work.

3.5 INSERTING REPLACEMENT STONE

- .1 Clean stone by washing with water and natural fibre brush before laying.
- .2 Dampen surfaces of slot and apply bedding mortar.
- .3 Lay heavy stones and projecting stones after mortar in courses below has hardened sufficiently to support weight.
- .4 Prop and anchor projecting stones until wall above is set.
- .5 Set large stones on water soaked softwood wedges to support stone in proper alignment until mortar has set. Remove wedges when dry, do not break off.
- .6 Remove mortar dropping from face of stone before mortar is set. Sponge stone free of mortar along joints as work progresses.
- .7 Set stones plumb, true, level in full bed of mortar with vertical joints flushed full except where otherwise specified. Completely fill anchor, dowel and lifting holes and voids left by removed edges.
- .8 Install stones in original quarry bed angle
- .9 Contractor to combine limestone elements in order to create an overall colour scheme matching the existing.

3.6 FILLING JOINTS/POINTING

- .1 Fill joints and point: in accordance with Section 04 03 07 - Masonry Repointing and Mortar Parging.

3.7 PROTECTION OF COMPLETED WORK

- .1 Protect adjacent work from marking or damage due to work.

- .2 Provide temporary bracing of masonry work during erection until permanent structure provides adequate bracing.

END OF SECTION

1. General

1.1 CONDITIONS

- .1 All General Requirements, Additional General Requirements, section 01 00 00, and all Addenda are an integral part of this section.
- .2 This section and the related drawings must be examined and read jointly with specification sections and drawings relative to other antecedent, subsequent, complementary, subordinate or otherwise related to work described herein.

1.2 SECTION INCLUDES

- .1 Contractor to supply all products, materials, tools, equipment, labour and services required for the complete execution of the work described in this section and/or shown on drawings, so that the completed work entirely fulfils the ends for which they are intended.
- .2 Are included all accessories, sundries and miscellaneous minor work not necessarily or specifically described in the specifications or shown on drawings but which are essential to the complete and good execution of the work in accordance with the quality standards cited in reference and/or recognized in the industry and in compliance with recognized best practices.
- .3 This section described in particular the requirements relative to rough carpentry for roofing work.

1.3 QUALITY ASSURANCE

- .1 Lumber identification: by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
- .2 Plywood identification: by grade mark in accordance with applicable CSA standards.
- .3 Sustainable Standards Certification:
 - .1 Certified Wood: submit listing of wood products and materials used in accordance with FSC-STD-01-001.
- .4 Each piece of lumber and plywood for preserved wood foundations to be identified by CSA O322 certified stamp.

2. Products

2.1 MATERIALS

- .1 Lumber: unless specified otherwise, softwood, S4S, moisture content 19% or less in accordance with following standards:
 - .1 CAN/CSA-O141.
 - .2 NLGA Standard Grading Rules for Canadian Lumber.
 - .3 FSC certified.
 - .4 Lumber for exterior ramps construction : Eastern White Cedar (*Thuja occidentalis*).
- .2 Furring, blocking, nailing strips, grounds, rough bucks, cants, curbs, fascia backing and sleepers:
 - .1 Board sizes: "Standard" or better grade.
 - .2 Dimension sizes: "Standard" light framing or better grade.
 - .3 Post and timbers sizes: "Standard" or better grade.
- .3 Panel Materials:
 - .1 Douglas fir plywood (DFP): to CSA O121, standard construction.

2.2 ACCESSORIES

- .1 Fasteners: to CAN/CSA-G164, for exterior work and pressure- preservative treated lumber.
 - .1 Nails, spikes and staples: to CSA B111.
 - .2 Bolts: 12.5 mm diameter unless indicated otherwise, complete with nuts and washers.
 - .3 Proprietary fasteners: toggle bolts, expansion shields and lag bolts, screws and lead or inorganic fibre plugs, , recommended for purpose by manufacturer.

3. Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for rough carpentry installation.

3.2 INSTALLATION

- .1 Install wood cants, fascia backing, nailers, curbs and other wood supports as required and secure using galvanized steel fasteners.
- .2 Install wood backing, dressed, tapered and recessed slightly below top surface of roof insulation for roof hopper.
- .3 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.
- .4 Countersink bolts where necessary to provide clearance for other work.

END OF SECTION

1. **General**

1.1 **CONDITIONS**

- .1 All General Requirements, Additional General Requirements, section 01 00 00, and all Addenda are an integral part of this section.
- .2 This section and the related drawings must be examined and read jointly with specification sections and drawings relative to other antecedent, subsequent, complementary, subordinate or otherwise related to work described herein.

1.2 **SECTION INCLUDES**

- .1 Contractor to supply all products, materials, tools, equipment, labour and services required for the complete execution of the work described in this section and/or shown on drawings, so that the completed work entirely fulfils the ends for which they are intended.
- .2 Are included all accessories, sundries and miscellaneous minor work not necessarily or specifically described in the specifications or shown on drawings but which are essential to the complete and good execution of the work in accordance with the quality standards cited in reference and/or recognized in the industry and in compliance with recognized best practices.
- .3 Works described in this section include all finish grading work.

1.3 **REFERENCES**

- .1 Canadian Council of Ministers of the Environment (CCME). CCME PN 1340 'Guidelines for Compost Quality' issued January 1996 (Revision 2005), Category (A) unrestricted, Category (B) restricted.

1.4 **SOURCE QUALITY CONTROL**

- .1 An independent testing laboratory will carry out inspection and testing of new topsoil. Testing laboratory to be retained by Contractor.
- .2 Test topsoil from source for clay, sand, and silt, Nitrogen (N), phosphorous (P), potassium (K) and magnesium (Mg), (N, P, K, Mg) soluble salt content, pH value, growth inhibitors, soil sterilants, organic matter, and conductivity. Submit 0.5 kg a sample of topsoil to a testing laboratory and indicate present use, intended use, type of subsoil and quality of drainage. Prepare and ship the sample in accordance with provincial regulations and testing laboratory requirements.
- .3 Determine required limestone treatment to bring pH value of soil ranges between 5.5 to 7.5 levels.
- .4 Submit two copies of soil analysis and recommendations for corrections to NCC Representative.

1.5 **DEFINITIONS**

- .1 Compost: should be a mixture of soil and decomposing organic matter, for use as a fertilizer, mulch, or soil conditioner. Compost should be processed organic matter, containing 40% or more organic matter. The product must be sufficiently decomposed (i.e. stable) so that any further decomposition does not adversely affect plant growth (a carbon and nitrogen (C:N) ratio below 50) and contain no toxic or growth inhibiting contaminants. Composed bio-solids must meet the requirements of the Waste Management CCME PN 1340.
- .2 Friable: Soil, which is easily crumbled through fingers when held by hand.

1.6 SCHEDULING OF FINISH WORK

- .1 Schedule the placing of the topsoil and grading to permit sodding and seeding within seven days.

2. Products

2.1 TOPSOIL

- .1 All topsoil supplied by the Contractor will be fertile, friable, natural sandy loam containing not less than 4% of organic matter for sandy loams with an acidity value ranging from pH 6.0 to pH 7.5 and capable of sustaining vigorous plant growth. It will be free of stems or roots, stones and clods more than 50 mm diameter or other extraneous matter. Screening of topsoil will be required if designated by NCC Representative. Topsoil will not be supplied in a frozen state.
- .2 Topsoil to be imported:
 - .1 Friable, neither heavy clay nor very light sandy nature consisting of 45% sand, 35% silt, 20% clay and pH value of 5.5 to 7.5. Free from subsoil, roots, vegetation, debris, toxic materials, and stones.
 - .2 Organic Matter should be 4% for clay loams, and 2% for sandy loams to maximum of 20% by volume.
 - .3 Contain no toxic elements or growth inhibiting materials.
 - .4 Finished surface free from:
 - .1 Debris and stones more than 50mm diameter.
 - .2 Coarse vegetative material, 10mm diameter, and 100 mm length, occupying more than 2% of soil volume.
 - .3 Consistency: friable when moist.

2.2 SOIL AMENDMENTS

- .1 Fertilizer:
 - .1 Complete commercial synthetic fertilizer with minimum 65% insoluble nitrogen.
 - .2 Formulation ratio - 10-6-4, 10% nitrogen, 6% phosphoric acid, 4% potash.
 - .3 Adjust fertilizer as per soil test recommendations.
- .2 Peatmoss:
 - .1 Derived from partially decomposed fibrous or cellular stems and leaves of species of Sphagnum Mosses.
 - .2 Elastic and homogeneous, brown in colour.
 - .3 Free of wood and deleterious material, which could prohibit growth.
 - .4 Shredded particle minimum size 5 mm.
- .3 Sand: washed coarse silica sand, medium to coarse textured.
- .4 Limestone:
 - .1 Ground agricultural limestone containing minimum calcium carbonate equivalent of 85%.
 - .2 Gradation requirements: percentage passing by weight, 90% passing 1.0 mm sieve, 50% passing 0.125 mm sieve.
- .5 Bonemeal: finely ground with a minimum analysis of 20% phosphoric acid.

2.3 SOURCE QUALITY CONTROL

- .1 Advise NCC Representative of topsoil sources to be utilized with sufficient lead-time for testing.
- .2 Contractor is responsible for amendments to supply topsoil as specified.
- .3 Soil testing by recognized testing facility for pH, P and K, and organic matter.

- .4 A testing laboratory designated by NCC Representative will carry out testing of topsoil. Soil sampling, testing, and analysis are to be in accordance with Provincial standards.

3. **Execution**

3.1 **PREPARATION OF EXISTING GRADE**

- .1 Verify that grades are correct. If discrepancies occur, notify NCC Representative and do not commence work until instructions have been received.
- .2 Grade the soil, eliminating uneven areas and low spots, ensuring positive drainage. Remove soil contaminated with toxic materials. Dispose of removed materials as directed by NCC Representative.
- .3 Remove debris, roots, branches, stones in excess of 50 mm diameter and other deleterious materials. Remove soil contaminated with calcium chloride, toxic materials, and petroleum products. Remove debris, which protrudes more than 75 mm above surface. Dispose of removed material off site.

3.2 **PLACE AND SPREADING OF TOPSOIL**

- .1 Spread topsoil after subgrade has been approved.
- .2 Spread topsoil with adequate moisture in uniform layers of 150 mm, over approved subgrade, where sodding, seeding, and planting is indicated.
- .3 For sodded areas keep topsoil 15 mm below finished grade.

3.3 **SOIL AMENDMENTS**

- .1 Apply soil amendments at rate as specified and as determined from soil sample test.
- .2 Mix soil amendments into full depth of topsoil prior to application of fertilizer.

3.4 **APPLICATION OF FERTILIZER**

- .1 Apply fertilizer at least one week after limestone application.
- .2 Spread fertilizer uniformly over entire area of topsoil at manufacturer's recommended rate of application or rate determined on basis of soil sample test. Mix fertilizer thoroughly to the full depth of topsoil.

3.5 **FINISH GRADING**

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

3.6 **ACCEPTANCE**

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

END OF SECTION