
Parks Canada Agency
Renewal Project
Port Royal Habitation
National Historic Site
Project No. 738

Seals Page

Section 00 01 07

Page 1

2017/09/08

Specifications
Issued for Tender
Parks Canada Agency

Renewal Project - Habitation Building
Port Royal National Historic Site

END

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PART 1 - GENERAL

1.1 Work Covered By
Contract Documents

- .1 The Work in this Contract comprises the completion of repairs to the roofs, chimneys, palisades and cannon platform of the Habitation in Port Royal National Historic Site, Nova Scotia.
- .1 Scope of work
 - .1 Replace the existing board and batten roofs on the Habitation. This will include remove and salvage existing roof boards for reuse. Salvaged boards to be reviewed by Departmental Representative to determine condition for reuse. Salvaged boards to be stored off the ground and covered until reinstalled by the contractor. All bottom boards are to be replaced with new boards supplied by Parks Canada. Estimated 50% of salvaged top boards to be reinstalled with the remaining to be supplied by Parks Canada Agency. Boards to be installed to match existing random width pattern.
 - .2 Remove existing tar paper membrane from roof and all fasteners. Install new air-gap barrier membrane and roof underlayment.
 - .3 Rake out and repoint all joints in the chimneys, install new lead flashing and replace existing chimney caps as per drawings.
- .4 Remove lightning protection system to completed work as required, replace with new code complaint system that matches the existing appearance and recertify, to CSA B72.

- .5 Misc. carpentry repair to the exterior structure of the Habitation. Replace the exterior wood staircase located in the courtyard leading to building 7.
- .6 Remove existing oak/pine shingles and existing membranes. Replace with new air gap barrier membrane, roof underlayment and shingles as indicated on the drawings.
- .7 Remove and replace all components of the Palisades as indicated on the drawings with new foundation. Contractor to supply all wood and materials for Palisade. Wood to be finished to match existing conditions.
- .8 Remove and replace all components of the gun platform with new foundation. Parks Canada Agency to supply heavy timbers for gun platform walls.
- .9 Supply and apply wood preservative to all exterior wood elements, and new lumber, including the palisade and canon platform etc., as directed.
- .10 Contractor to review site conditions, notify Departmental Representative of any deviations from drawings.

1.2 Contract Method

- .1 Construct Work under a fixed price contract.

1.3 Work by Others

- .1 Coordinate work with that of other Contractors and Parks Canada operations.
- .2 Additional payments or schedule extensions due to work or scheduling conflicts with other Contractors will not be considered.

1.4 Work Sequence

- .1 Construct Work in stages to accommodate continuous public access to the Port Royal National Historic Site.
- .2 Work to be phased to minimize impact on visitors. Any scaffolding must allow visitors to enter exhibits.
- .3 While the site is open to visitors work should be focused on the exterior faces of the roofs, where possible. Work inside the Habitation to be performed after the visitor season, if possible. Work on the front gate must not impact visitors to the site, and must be done outside of the visitor season is over.
- .4 Any active phase of the roof repairs must be completed by November 15, 2018. Any remaining work will be resumed in April 2019. Palisade and Gun platform rebuild are to take place in 2019. Wood for the palisade is to be delivered to site and stored under hoarding in 2018 so the wood can age before installation in 2019.

1.5 Contractor Use of Premises

- .1 Limit use of premises for Work, to allow:
 - .1 Work by other contractors.
 - .2 Public usage.
 - .3 Parks Canada will accommodate the Contractor with a location for their construction trailer.
- .2 Storage areas for Contractor's equipment and materials shall be located as per site plan. Locations for equipment and materials storage areas shall be the responsibility of the Contractor. Restoring any damage to the grass or surround landscaping and site road to the satisfaction of the Departmental Representative will be the contractor's responsibility.

- .3 Disposal of waste materials shall be outside the Site Boundaries except as directed in the specifications. Locations and costs associated with waste disposal shall be the responsibility of the Contractor. Salvaged roofing and siding that is deemed unsuitable for reuse is not to be disposed of until instructed by the Departmental Representative in writing and to be stored on site.
- .4 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Departmental Representative.
- .5 The Contractor shall provide their own sanitary facilities. The Contractor will not be permitted to use the facilities on site.
- .6 Contractor shall provide all materials and hoarding required to store salvaged roofing and siding boards off the grounds and in a dry condition.
- .7 Contractor will be responsible to supply their own electrical power for tools and equipment.

1.6 Existing Services

- .1 Establish location and extent of service lines in area of work before starting Work. Notify Departmental Representative of findings.
- .2 Protect, relocate or maintain existing active services.

1.7 Documents Required

- .1 Maintain at job site, one copy of each document as follows:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Reviewed Shop Drawings.

- .5 List of Outstanding Shop Drawings.
- .6 Change Orders.
- .7 Other Modifications to the Contract.
- .8 Field Test Reports.
- .9 Copy of Approved Work Schedule.
- .10 Health and Safety Plan and Other Safety Related Documents.
- .11 Other documents as specified.
- .12 Construction Schedule
- .13 Environmental Control Plan (ECP)

1.8 Park Operational
Season

- .1 The Habitation open to the visitors and the public from May 17, through October 7, each season. After October 7, the Habitation is closed to visitors, however the surrounding grounds are open to the public at all times.
- .2 There are numerous events that take place at the site and the contractor may have to adjust operations to accommodate them. Specific dates are noted below, some additional events may occur, Parks Canada Agency will provide as much notice as possible. Contractor is to confirm with the Park Staff the timing and duration of work restrictions on these days:
Work must stop at 5:00 pm on site for the following dates: June 28, August 8, August 23, September 6, and September 13.
Work must stop on site before 12:00 pm for the following dates: July 1, July 12, July 26, August 9, and August 23.

1.9 Project Completion
Date

- .1 Contractor to mobilize to site within 15 days of the Startup meeting. Work will be completed in 2 phases. Phase 1 will be from award to December 1, 2018. Work will be suspended in December 1, 2018, and will resume April 1, 2019 for phase 2. All aspects of the work of this project must be totally complete by June 15, 2019.

PART 1 - GENERAL

1.1 Access and
Egress

- .1 Design, construct and maintain temporary "access to" and "egress from" work areas, in accordance with relevant municipal, provincial and other regulations.

1.2 Use of Site
and Facilities

- .1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Departmental Representative to facilitate work as stated.
- .2 Provide for personnel and vehicle access.
- .3 Where security is reduced by work provide temporary means to maintain security.
- .4 Contractor to provide own facilities in accordance with Section 01 52 00. Contractor will not be permitted to use site facilities.
- .5 Contractor to supply and erect temporary site fencing and hoarding to keep the public out of work areas. When the canon platform and palisades are removed, additional fencing is required to maintain security of the Habitation and prevent trespassing.

1.3 Alterations,
Additions or Repairs

- .1 Execute work with least possible interference or disturbance to public and normal use of premises. Arrange with Departmental Representative to facilitate execution of work.

1.4 Existing Services

- .1 Notify Departmental Representative and utility companies of intended interruption of services and obtain required permission.

1.5 Special
Requirements

- .1 Work outside of normal working hours will require 48 hours written notice to the Departmental Representative.
- .2 Submit schedule in accordance with Section 01 32 16.07 - Construction Progress Schedule - Bar (GANTT) Chart.
- .3 Ensure Contractor's personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.
- .4 Keep within limits of work and avenues of ingress and egress.
- .5 Contractor to minimize vehicles on the site. Contractor personnel not to use visitor parking lot during operational season.
- .6 Contractor may have to adjust work and noise levels due to special events on site

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

END

PART 1 - GENERAL

1.1 Measurement

- .1 This contract will be paid lump sum unless otherwise indicated.
- .2 It is the intention to provide for a finished piece of work, complete in all essentials and details, including all items reasonably inferable from the drawings and specifications.
- .3 The aggregate of all unit prices and lump sum payments shall constitute full compensation for the entire work of the Contract, as shown, specified and intended, regardless of any omission in the tender documents of any items which are necessary for the completion of the work including temporary facilities, safety, etc.
- .4 Should there be any discrepancy regarding measurement between the Measurement and Payment Section and any other section in the specifications, the Measurement and Payment Section shall overrule the other specification section.
- .5 Unless otherwise specified, all materials necessary to complete the items listed in the Unit Price Table and the finished work are to be supplied by the Contractor and the cost of such material is to be included in the Contractor's prices. There will be no measurement for work not authorized in writing, or for work beyond authorized limits as determined by the Departmental Representative.
- .6 All unit prices and lump sums shall include all costs applicable to the items, including labour, materials, equipment, transportation, ancillaries and all other applicable and relevant costs as intended and as required to complete the work to the full satisfaction of the Departmental Representative. The unit prices and lump sums indicated shall exclude HST.
- .7 All work including shoring, protection measures, etc. required to prevent damage/disturbance to existing structures of any areas damaged as a result of work or access are considered incidental to the work.
- .8 Where disposal of excess material or debris is included in an item this shall include disposal off site in an environmentally approved disposal site.

1.2 Pay Items

- .2 All items in this contract will be paid for by lump sum payments for the items listed below. There shall be no measurement associated with these items.
 - .1 Bid Item 1: Mobilization and Demobilization work as follows:
 - .1 The price shall include all costs associated with mobilization, temporary facilities, site fencing, restoring grass and impacted areas, transporting PCA supplied materials on site, disposal of waste etc. Any overhead and items not included in the other bid items.
 - .2 Bid Item 2: Environmental work as follows:
 - .1 The price shall include all costs associated with environmental requirements identified in the specifications, the attached BIA, erosion controls and government regulations.
 - .3 Bid Item 3: Board & Batten Roof work as follows:
 - .1 Parks Canada Agency will supply new bottom and top roofing boards, for contractor to install. The price shall include removal, salvage of existing roof boards. Removal of existing tar paper membrane and fasteners. Supply and install new roof air vapour barrier, air-gap system, and flashings. Preparing new roof boards as per details on drawings. Reinstall new and salvaged roof boards, c/w all associated materials and fasteners. Contractor to supply and install pine wood to replace existing wood finishes that must be removed during roofing work. All scaffolding and equipment to perform the work. Contractor to move PCA supplied wood to work area. Provide itemized price for each, as noted below:
 - .a North section (Roof 5 on A-2)
 - .b West Section (Roof 4 on A-2)
 - .c South Section (Roof 3 on A-2)
 - .d East Section (Roof 7&8 on A-2)

- .4 Bid Item 4: Shingle Roof Work as follows:
- .1 The price shall include removal of existing shingles and any existing tar paper membrane and fasteners. Supply and install new roof air vapour barrier, air gap system, and flashings. Supply and install new shingles as indicated on the drawings, c/w all associated materials. Contractor to supply and install pine wood to replace existing wood elements that must be removed during roofing work. All scaffolding and equipment to perform the work. Provide itemized price for each, as noted below:
- .a Gate (Roof 1 on A-2)
.b Dove (Roof 7D on A-2)
.c Well (Roof 9 on A-2)
.d Exhibit (Roof 2 on A-2)
.e Governor (Roof 6 on A-2)
- .5 Bid Item 5: Lightning protecting work as follows:
- .1 The price shall include removal and replacement of existing lightning protection system with new to match existing. Recertify to CSA B72.
- .6 Bid Item 6: Canon Platform work as follows:
- .1 Parks Canada Agency will provide heavy timbers for rebuilding gun platform walls, for contractor to install. The price shall include all labour, materials, scaffolding, and equipment to dismantle the existing Canon Platform, moving PCA supplied lumber on site and rebuild the replacement. Contractor to supply new decking, door, etc. to match existing and all fasteners. All excavation required to install footings and backfill material. Also include removal and storage of any historic items and canons to be reinstalled after rebuilt. Provide itemized price for each, as noted below:
- .a Dismantle and remove existing Canon Platform.
.b Earth Works.
.c Rebuilt Canon Platform.

- .7 Bid Item 7: Palisade work as follows:
- .1 The price shall include the supply of all lumber, materials, fasteners, scaffolding, equipment and labour to replace all components of the Palisade. All wood to be pine and finished to match existing appearance. Item including all excavation required to install footings and backfill material. Also include careful removal and storage of any historic items and canons to be reinstalled later. The contractor is required to deliver to site all lumber for the Palisade in 2018, and store onsite until construction in 2019, and supply hording to protect the material. Provide itemized price for each, as noted below:
- .a Supply and delivery lumber to site.
.b Dismantle and remove existing Palisade.
.c Earthworks.
.d Rebuilt Palisade.
- .8 Bid Item 8: Chimney work as follows:
- .1 The price shall include all costs associated with scaffolding, removing existing mortar, supply and install new mortar, removal of existing caps and install new replacements caps, supply and install new lead flashings, and all materials and labour to complete the work. Provide itemized price for each, as noted below:
- .a Repoint all chimneys.
.b Remove and replace all chimney caps.
.c Supply and install new lead flashings around chimneys.
- .9 Bid Item 9: Replace Exterior Staircase as follows:
- .1 The price shall include all costs associated with the removal, supply and installation to replace the existing exterior wood staircase located in the courtyard that leads to the 2nd floor of structure 7 as shown on drawing A-3 photo 9. Wood to be pine and installed to match existing fasteners and appearance.

.10 Bid Item 10: Wood Preservative as follows:

.1 The price shall include all costs associated with the supply and application of wood preservative to all exterior wood surfaces of the Habitation. This is to include all cuts made to new and existing wood elements, existing siding, windows, doors etc. as per manufacture instructions.

PART 2 - PRODUCTS

- 2.1
- .1 Air Vapour Barrier Underlayment Membrane: HAL Industries - BREATHEX
 - .2 Air-Gap Membrane: Dorken Group - Delta-Trela
 - .3 Wood Preservative: Polyprep 774-188 - Preservative for exterior wood clear, or SICO 774-444- Preservative for exterior wood clear.

PART 3 - EXECUTION

- 3.1 NOT USED
- .1 Not Used.

END

PART 1 - GENERAL

1.1 Administrative

- .1 The Departmental Representative will schedule and administer project meetings throughout the progress of the work.
- .2 The Departmental Representative will prepare agenda for meetings.
- .3 The Departmental Representative will distribute written notice of each meeting in advance of meeting date.
- .4 The Contractor shall provide physical space and make arrangements for meetings.
- .5 The Contractor shall preside at meetings.
- .6 The Departmental Representative will record the meeting minutes, including significant proceedings and decisions and identify actions by parties.
- .7 The Departmental Representative will reproduce and distribute copies of minutes within three days after meetings and transmit to the Contractor, meeting participants, and affected parties not in attendance.
- .8 Representatives of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.2 Preconstruction
Meeting

- .1 Within 15 days after award of Contract, the Departmental Representative shall request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
- .2 Senior representatives of Contractor, major Subcontractors, field inspectors, supervisors and Departmental Representative will be in attendance.

- .3 The Contractor shall establish time and location of meeting and notify parties concerned minimum 5 days before meeting.
- .4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.
- .5 Agenda to include:
 - .1 Appointment of official representative of participants in the Work.
 - .2 Schedule of Work: in accordance with NSTIR Standard Specification.
 - .3 Schedule of submission of shop drawings, samples. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
 - .4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities.
 - .5 Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.
 - .6 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
 - .7 Owner provided products.
 - .8 Record drawings in accordance with Section 01 78 00 - Closeout Submittals.
 - .9 Maintenance manuals in accordance with Section 01 78 00 - Closeout Submittals.
 - .10 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.
 - .11 Monthly progress claims, administrative procedures, photographs, hold backs.
 - .12 Appointment of inspection and testing agencies or firms.
 - .13 Insurances, transcript of policies.

1.3 Progress Meetings

- .1 During course of Work schedule progress meetings bi-weekly.
- .2 Contractor, major Subcontractors involved in Work and Departmental Representative are to be in attendance.
- .3 Notify parties minimum 7 days prior to meetings.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

END

PART 1 - GENERAL

1.1 Definitions

- .1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks. Schedule to be resource loaded.
- .2 Bar Chart (Gantt chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.
- .3 Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.
- .4 Construction Work Week: Monday to Friday, inclusive, will provide five day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.
- .5 Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.
- .6 Master Plan: summary-level schedule that identifies major activities and key milestones.
- .7 Milestone: significant event in project, usually completion of major deliverable.

1.2 Requirements

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

1.3 Action and Informational Submittals

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to Departmental Representative within 10 working days of Award of Contract, Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.
- .3 Submit Project Schedule to Departmental Representative Within 5 working days of receipt of acceptance of Master Plan.

1.4 Master Plan

- .1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).
- .2 Departmental Representative will review and return revised schedules within 5 working days.

END

PART 1 - GENERAL

1.1 Administrative

- .1 Submit to Departmental 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 This section specifies general requirements and procedures for Contractor's submissions of shop drawings, product data, samples and mock-ups to the Departmental Representative for review. Additional specific requirements for submissions are specified in individual sections.
- .3 Do not proceed with Work until relevant submissions are reviewed by the Departmental Representative.
- .4 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .5 Where items or information is not produced in SI Metric units, converted values are acceptable.
- .6 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .7 Notify the Departmental Representative, in writing, at the time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .8 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review of submission.

- .9 Make any changes which Departmental Representative may require consistent with Contract Documents and resubmit as directed by the Departmental Representative.
- .10 Notify the Departmental Representative, in writing, when resubmitting, of any revisions other than those requested by the Departmental Representative.

1.2 Submission Requirements

- .1 Coordinate each submission with requirements of work and Contract Documents.
Individual submissions will not be reviewed until all related information is available.
- .2 Allow 7 days for Departmental Representative's review of each submission.
- .3 Adjustments made on submissions by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .4 Make changes in submissions as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
- .5 Accompany submissions with transmittal letter, in duplicate, containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
 - .6 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.

 - .7 After Departmental Representative's review, distribute copies.
- 1.3 Shop Drawings
- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
 - .2 Where necessary or requested by the Departmental Representative, submit drawings stamped and signed by professional engineer registered or licensed in the Province of Nova Scotia.
 - .3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
 - .4 Submit electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.
 - .5 Cross-reference shop drawing information to applicable portions of Contract Documents.

1.4 Product Data

- .1 Product data: manufacturers catalogue sheets, brochures, literature, performance charts and diagrams, used to illustrate standard manufactured products.
 - .1 Submit electronic copies of product data.
 - .2 Sheet size: 215 x 280 mm, maximum of 3 modules.
 - .3 Delete information not applicable to project.
 - .4 Supplement standard information to provide details applicable to project.
 - .5 Cross-reference product data information to applicable portions of Contract Documents.

1.5 Samples

- .1 Samples: examples of materials, equipment, quality, finishes, workmanship.
- .2 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.6 Test Reports

- .1 Submit electronic copies of test reports for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product of system to be provided has been tested in accord with specified requirements.
 - .2 Testing will have been within 3 years of contract award for project.

1.7 Certificates

- .1 Submit electronic copies of certificates for requirements requested in specification Sections and as requested by Departmental Representative.
 - .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 to be dated after award of project contract complete with project name.

1.8 Manufacturer's Instructions

- .1 Submit electronic copies of manufacturer instructions.
 - .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.

1.9 Review

- .1 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, electronic copies will be returned and fabrication and installation or Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, will be performed before fabrication and installation of Work may proceed.
- .2 The review of shop drawings by Departmental Representative is for sole purpose of ascertaining conformance with general concept.
 - .1 This review shall not mean that Departmental Representative 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.

1.10 Certificates and
Transcripts

- .1 Immediately after award of Contract, submit Letter of Good Standing from Workers Compensation Board of Nova Scotia.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

END

- .2 Submit site-specific Health and Safety Plan prior to commencement of Work.
 - .1 Submit within 10 work days of notification of Bid Acceptance. Provide 3 copies.
 - .2 Departmental Representative will review Health and Safety Plan and provide comments.
 - .3 Revise the Plan as appropriate and resubmit within 5 work days after receipt of comments.
 - .4 Departmental Representative's review and comments made of the Plan shall not be construed as an endorsement, approval or implied warranty of any kind by Canada and does not reduce Contractor's overall responsibility for Occupational Health and Safety of the Work.
 - .5 Submit revisions and updates made to the Plan during the course of Work.
 - .6 Submit work procedures as part of the health and safety plan prior to commencing work and upon request by the Departmental representative.
- .3 Submit name of designated Health & Safety Site Representative and support documentation specified in the Safety Plan.
- .4 Submit copies of permits obtained.
- .5 Submit copy of Letter in Good Standing from Provincial Workers Compensation or other department of labour organization.
 - .1 Submit update of Letter of Good Standing whenever expiration date occurs during the period of Work.
- .6 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .7 Submit copies of incident reports, within 5 days of incident to Departmental Representative.
- .8 Submit WHMIS MSDS - Material Safety Data Sheets.

1.4 Compliance Requirements

- .1 Comply with Occupational Health and Safety Act for Province of Nova Scotia, and Regulations made pursuant to the Act.
- .2 Comply with Canada Labour Code - Part II (entitled Occupational Health and Safety) and the Canada Occupational Health and Safety Regulations (COSH) as well as any other regulations made pursuant to the Act.
 - .1 The Canada Labour Code can be viewed at:
[www.http://laws.justice.gc.ca/en/L-2/](http://laws.justice.gc.ca/en/L-2/)
 - .2 COSH can be viewed at:
[www.http://laws.justice.gc.ca/eng/SOR-86-304/ne.html](http://laws.justice.gc.ca/eng/SOR-86-304/ne.html)
- .3 In case of conflict or discrepancy between above specified requirements, the more stringent shall apply.
- .4 Maintain Workers Compensation Coverage in good standing for duration of Contract. Provide proof of clearance through submission of Letter in Good Standing.
- .5 Medical Surveillance: Where prescribed by legislation or regulation, obtain and maintain worker medical surveillance documentation.

1.5 Responsibility

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons and environment adjacent to the site to extent that they may be affected by conduct of Work.
- .2 Comply with and enforce compliance by all workers, sub-contractors and other persons granted access to Work Site with safety requirements of Contract Documents, applicable federal, provincial, and local

by-laws, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.6 Site Control and Access

- .1 Control the Work and entry points to Work Site. Approve and grant access only to workers and authorized persons. Immediately stop and remove non-authorized persons.
 - .1 Departmental Representative will provide names of those persons authorized by Departmental Representative to enter onto Work Site and will ensure that such authorized persons have the required knowledge and training on Health and Safety pertinent to their reason for being at the site. However, Contractor remains responsible for the health and safety of authorized persons while at the Work Site.
- .2 Isolate Work Site from other areas of the premises by use of appropriate means.
 - .1 Erect fences, hoarding, barricades and temporary lighting as required to effectively delineate the Work Site, stop non-authorized entry, and to protect pedestrians and vehicular traffic around and adjacent to the Work and create a safe environment.
 - .2 Post signage at entry points and other strategic locations indicating restricted access and conditions for access.
- .3 Provide safety orientation session to persons granted access to Work Site. Advise of hazards and safety rules to be observed while on site.
- .4 Ensure persons granted site access wear appropriate PPE. Supply PPE to inspection authorities who require access to conduct tests or perform inspections.
- .5 Secure Work Site against entry when inactive or unoccupied and to protect persons against harm.

1.7 Protection

- .1 Give precedence to safety and health of persons and protection of environment over cost and schedule considerations for Work.
- .2 Should unforeseen or peculiar safety related hazard or condition become evident during performance of Work, immediately take measures to rectify situation and prevent damage or harm. Advise Departmental Representative verbally and in writing.

1.8 Filing of Notice

- .1 File Notice of Project with pertinent provincial health and safety authorities prior to beginning of Work.
 - .1 Departmental Representative will assist in locating address if needed.

1.9 Permits

- .1 Post permits, licenses and compliance certificates, at Work Site.
- .2 Where a particular permit or compliance certificate cannot be obtained, notify Departmental Representative in writing and obtain approval to proceed before carrying out applicable portion of work.

1.10 Hazard Assessments

- .1 Perform site specific health and safety hazard assessment of the Work and its site.
- .2 Carryout initial assessment prior to commencement of Work with further assessments as needed during progress of work, including when new trades and subcontractors arrive on site.
- .3 Record results and address in Health and Safety Plan.
- .4 Keep documentation on site for entire duration of the Work.

1.11 Project / Site
Conditions

- .1 Following are potential health, environmental and safety hazards at the site for which Work may involve contact with:
 - .1 Known latent site and environmental conditions:
 - .1 Electrical safety required.
 - .2 Working with adverse weather conditions.
 - .3 Working near trench excavations.
 - .4 Working near buried utilities.
 - .5 Working near heavy moving machinery.
 - .6 Working at heights
 - .7 Animal and bird waste on or under the roof boards.
 - .2 Facility on-going operations:
 - .1 The Contractor will co-operate with users of existing facilities. Maintain access to the existing park facilities and consult with the Departmental Representative for site access limitations.
 - .3 Should interference occur, take directions from Departmental Representative.
 - .4 Do not unreasonably encumber site with materials.
 - .5 Move stored products or equipment which interfere with operations.
 - .6 Comply with all regulations and authorities having jurisdiction over the work.
- .2 Above items shall not be construed as being complete and inclusive of potential health and safety hazards encountered during Work.
- .3 Include above items in the hazard assessment of the Work.
- .4 MSDS Data sheets of pertinent hazardous and controlled products stored on site can be obtained from Departmental Representative.

1.12 Meetings

- .1 Attend pre-construction health and safety meeting, convened and chaired by Contractor, prior to commencement of Work, at time, date and location determined by Departmental Representative. Ensure attendance of:
 - .1 Superintendent of Work
 - .2 Designated Health & Safety Site Representative
 - .3 Subcontractors
- .2 Conduct regularly scheduled tool box and safety meetings during the Work in conformance with Occupational Health and Safety regulations.
- .3 Keep documents on site.

1.13 Health and Safety Plan

- .1 Prior to commencement of Work, develop written Health and Safety Plan specific to the Work. Implement, maintain, and enforce Plan for entire duration of Work and until final demobilization from site.
- .2 Health and Safety Plan shall include the following components:
 - .1 List of health risks and safety hazards identified by hazard assessment.
 - .2 Control measures used to mitigate risks and hazards identified.
 - .3 On-site Contingency and Emergency Response Plan as specified below.
 - .4 On-site Communication Plan as specified below.
 - .5 Name of Contractor's designated Health & Safety Site Representative and information showing proof of his/her competence and reporting relationship in Contractor's company.
 - .6 Names, competence and reporting relationship of other supervisory personnel used in the Work for occupational health and safety purposes.

- .3 On-site Contingency and Emergency Response Plan shall include:
 - .1 Operational procedures, evacuation measures and communication process to be implemented in the event of an emergency.
 - .2 Evacuation Plan: site plan layouts showing marshalling areas. Details on alarm Notification methods, location of firefighting equipment and other related data.
 - .3 Name, duties and responsibilities of persons designated as Emergency Warden(s) and deputies.
 - .4 Emergency Contacts: name and telephone number of officials from:
 - .1 General Contractor and subcontractors.
 - .2 Pertinent Federal and Provincial Departments and Authorities having jurisdiction.
 - .3 Local emergency resource organizations.
 - .5 Harmonize Plan with Facility's Emergency Response and Evacuation Plan. Departmental Representative will provide pertinent data including name of Parks Canada and Facility Management contacts.
- .4 On-site Communication Plan:
 - .1 Procedures for sharing of work related safety information to workers and subcontractors, including emergency and evacuation measures.
 - .2 List of critical work activities to be communicated with Facility Manager which have a risk of endangering health and safety of Facility users.
- .5 Address all activities of the Work including those of subcontractors.
- .6 Review Health and Safety Plan regularly during the Work. Update as conditions warrant to address emerging risks and hazards, such as whenever new trade or subcontractor arrive at Work Site.
- .7 Departmental Representative will respond in writing, where deficiencies or concerns are noted and may

request re-submission of the Plan with correction of deficiencies or concerns.

- .8 Post copy of the Plan, and updates, prominently on Work Site.

1.14 Safety Supervision

- .1 Employ Health & Safety Site Representative responsible for daily supervision of health and safety of the Work.
- .2 Health & Safety Site Representative may be the Superintendent of the Work or other person designated by Contractor and shall be assigned the responsibility and authority to:
 - .1 Implement, monitor and enforce daily compliance with health and safety requirements of the Work
 - .2 Monitor and enforce Contractor's site-specific Health and Safety Plan.
 - .3 Conduct site safety orientation session to persons granted access to Work Site.
 - .4 Ensure that persons allowed site access are knowledgeable and trained in health and safety pertinent to their activities at the site or are escorted by a competent person while on the Work Site.
 - .5 Stop the Work as deemed necessary for reasons of health and safety.
- .3 Health & Safety Site Representative will:
 - .1 Be qualified and competent person in occupational health and safety.
 - .2 Have site-related working experience specific to activities of the Work.
 - .3 Be on Work Site at all times during execution of the Work.
- .4 All supervisory personnel assigned to the Work shall also be competent persons.

- .5 Inspections:
 - .1 Conduct regularly scheduled safety inspections of the Work on a minimum biweekly basis. Record deficiencies and remedial action taken.
 - .2 Conduct Formal Inspections on a minimum monthly basis. Use standardized safety inspection forms. Distribute to subcontractors.
 - .3 Follow-up and ensure corrective measures are taken.
- .6 Cooperate with Facility's Occupational Health and Safety representative should one be designated by Departmental Representative.
- .7 Keep inspection reports and supervision related documentation on site.

1.15 Training

- .1 Use only skilled workers on Work Site who are effectively trained in occupational health and safety procedures and practices pertinent to their assigned task.
- .2 Maintain employee records and evidence of training received. Make data available to Departmental Representative upon request.
- .3 When unforeseen or peculiar safety-related 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 Departmental Representative verbally and in writing.

1.16 Minimum Site Safety Rules

- .1 Notwithstanding requirement to abide by federal and provincial health and safety regulations; ensure the following minimum safety rules are obeyed by persons granted access to Work Site:
 - .1 Wear appropriate PPE pertinent to the Work or assigned task; minimum being hard hat, safety footwear, safety glasses and hearing protection (as required).

- .1 Comply with requirements of Workplace hazardous Materials Information System (WHMIS).
- .2 Keep MSDS data sheets for all products delivered to site.
 - .1 Post on site.
 - .2 Submit copy to Departmental Representative.
- .3 For interior work in an occupied Facility, post additional copy in one or more publicly accessible locations.

1.20 Blasting

- .1 Blasting or other use of explosives is not permitted on site without prior receipt of written permission and instructions from Departmental Representative.

1.21 Confined Spaces

- .1 Abide by occupational health and safety regulations regarding work in confined spaces.
- .2 Obtain an Entry Permit in accordance with Part XI of the Canada Occupational Health and Safety Regulations for entry into an existing identified confined space located at the Facility or premises of Work.
 - .1 Obtain permit from Facility Manager
 - .2 Keep copy of permit issued.
- .3 Safety for Inspectors:
 - .1 Provide PPE and training to Departmental Representative and other persons who require entry into confined space to perform inspections.
 - .2 Be responsible for efficacy of equipment and safety of persons during their entry and occupancy in the confined space.

1.22 Site Records

- .1 Maintain on Work Site copy of safety related documentation and reports stipulated to be produced in compliance with Acts and Regulations of authorities having jurisdiction and of those documents specified herein.

PART 1 - GENERAL

1.1 Standard

- .1 All work of this section shall comply with the requirement of the most recent version of the Nova Scotia Transportation and Infrastructure Renewal (NSTIR) Standard Specification Division 7, except as amended herein.
- .2 All work shall comply with the Parks Canada Agency's project BIA, attached in the appendix.

1.2 References

- .1 Nova Scotia Department of Transportation and Infrastructure Renewal Standard Specifications (most recent version):
 - .1 NSTIR Standard Specification Division 7- Environmental Protection.
 - .2 The Nova Scotia Environment Act and Regulations pursuant to the Act.
 - .3 The Erosion and Sedimentation Control Handbook for Construction Sites.
 - .4 TIR Environmental Management Program Manual.
 - .5 CWRs Erosion and Sediment Control Course and binder.
- .2 Canadian Environmental Assessment Act (most recent version).

1.3 Fires

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

1.4 Disposal of
Wastes

- .1 Dispose of waste material in designated waste disposal area.
- .2 Remove and dispose of containers and waste fluids associated with vehicle maintenance in a provincially approved waste disposal site outside the park.
- .3 Disposal of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways,

storm or sanitary sewers is prohibited. Dispose of all waste materials at provincially approved waste disposal site outside the park boundary. Littering is prohibited.

- .4 To the maximum extent possible, divert waste cardboard, plastic and metal products from landfill to appropriate recycling facilities.

1.5 Drainage

- .1 Provide temporary drainage and pumping required to keep excavations and site free from water.
- .2 Do not pump water containing suspended materials into waterways, sewer or drainage systems.
- .3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

1.6 Site Clearing And Plant Protection

- .1 Exercise special care to protect trees, shrubs and vegetation within contract limit lines outlined on drawings or as directed by Departmental Representative.
- .2 Protect roots of designated trees to drip line during excavation and site grading to prevent disturbance or damage.
 - .1 Avoid unnecessary traffic, dumping and storage of materials over root zones.
- .4 Restrict tree removal to areas indicated or designated by Departmental Representative.
- .5 When, in the opinion of the Departmental Representative/Park Environmental Protection Officer (EPO), negligence on the part of the Contractor results in unnecessary damage or destruction of vegetation, or other environmental or aesthetic features within or beyond the staked or designated work area, the Contractor shall be responsible, at its

expense, for the complete restoration including the replacement of trees, shrubs, grass, etc. to the satisfaction of the Departmental Representative.

1.7 Pollution Control

- .1 Maintain temporary erosion and pollution control features installed under this Contract.
- .2 Control emissions from equipment and plant in accordance with local authorities' emission requirements.
- .3 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.
- .4 All equipment, vehicles and plant used on site will be in good operating condition and leak free. The Departmental Representative reserves the right to have the Contractor immediately remove from the site, any deficient equipment, vehicles, etc.

1.8 Vehicular Movements

- .1 Restrict movement of vehicles and equipment to existing disturbed areas (access roads, borrow pits, disposal areas and right-of-ways).

1.9 Storage and Handling of Fuels And Dangerous Fluids

- .1 Locate fuel storage facility outside Park and minimum of 100 m from any water body. Any fuel storage tankage (s) used shall be of adequate double-walled safety construction and shall be enclosed by an impermeable containment system with a volume capacity equal to at least 110% of fuel storage tank(s)' fuel storage capacity. Any spillage and/or ponded fuel shall be immediately recovered and placed in secure containers. When no longer required, the fuel storage area shall be cleaned up to satisfaction of the Departmental Representative and any fuel

contaminated soil removed to the nearest approved industrial waste disposal site.

- .1 Fueling of vehicles or equipment will not be permitted within 100 m of any water body.
- .2 Exercise care in handling of fuels to minimize potential for fuel spills. Report immediately any fuel spills to Departmental Representative. Contractor is responsible for any cleanup or repair resulting from any spills.
- .3 Supply and maintain on site emergency response material to contain spills and minimize environmental damage, i.e. absorbent material, to the approval of Departmental Representative. Disposal of all contaminated material as per Clause 1.4 of this section.

1.10 Environmental Protection Plan

- .1 The Contractor is required to submit a plan showing all pollution control measures and sediment control measures that will be used to fulfill the requirements of the Environmental Protection Section and Environmental Screening attached to this document. This plan will be reviewed by the Departmental Representative and the Environmental Protection Officer prior to start of construction activities.
- .2 Proposed location of waste bins shall be indicated in Environmental Protection Plan.
- .3 All cutting of pressure treated lumber, including Parks Canada supplied roofing boards, must follow Parks Canada management procedures. This requires that all cut pressure treated wood sawdust must be cut over a tarp and collected so it can be kept out of the environment.
- .4 Application of wood preservative must follow Parks Canada procedures and manufactures recommendations.

END

PART 1 - GENERAL

1.1 Optional Site Meeting

- .1 Prior to tender submission an optional site meeting will be held; project scope and construction details and restrictions will be reviewed.
- .2 Tenderers shall be advised that a date and time for the optional site visit will be announced with the tender.

1.2 National Parks Act

- .1 The requirements and regulations made under the National Parks Act shall apply to this project.
- .2 A copy of this Act may be obtained by contacting the Departmental Representative.

1.3 Archeological Status

- .1 Relics and antiquities and items of historical or scientific interest found on site, shall remain property of Parks Canada. Protect such articles, and request directives from the Departmental Representative.
- .2 Give immediate notice to the Departmental Representative if evidence of archaeological finds are encountered during construction, and await Departmental Representative's written instructions before proceeding with work in this area.
- .3 An archaeologist, representing Parks Canada, may be present during excavation work. Archaeologist has authority to stop work when excavation uncovers archaeological resources.
- .4 Suspend excavation so that appropriate recording and removal of archaeological resources can be completed. Provide labour assistance as necessary to the archaeologist during removal and recording of archaeological resources. There will be

no additional payment to the Contractor as a result of this provision of labour assistance and work suspension.

- .5 Any other aspects of the work that might involve disturbance of existing surfaces, grade, walls, etc. may also be subject to archaeological surveillance.

1.4 Pre-Construction Mitigation

- .1 The Contractor will be firmly aware that he/she are working in a National Historic Site setting with its emphasis on cultural and natural resource protection. See Basic Impact Assessment (Appendix A)
- .2 The Environmental Screening containing two sets of mitigations, one set for cultural resource protection and one set for natural resource protection, will be read in its entirety and mitigation will be followed as described.
- .3 The National Parks Act and Historic Parks Regulations will be followed during all phases of construction. The Acts and Regulations can be made available for review at the Administration Office of Port Royal.
- .4 Contractor will ensure that all on-site subcontractors and suppliers are fully informed of all information in the Environmental Screening and that this information is issued to all staff.
- .5 All defined areas with fencing and barricades are not to be removed unless otherwise stated by Departmental Representative.
- .6 The Contractor will adhere to all mitigation set out in the Environmental Screening.

- .7 All equipment operators will be trained and familiar with cultural resources.
- .8 When surveillance archeology is required the archeologist will oversee all excavation and shall stop the work to record or remove the archeological resources encountered, or to check the presence of these resources.
- .9 Departmental Representative will be contacted immediately if archeological resources are encountered.
- .10 To mitigate damage to cultural resources encountered during construction the Contractor will undertake additional measures at the direction of the Departmental Representative. They may include geotextile, protective covering and any materials associated with stabilization.
- .11 Any artifacts or items of historical significance uncovered or found during construction or maintenance, and their associated archeological records, shall revert back to Canada.

1.5 Construction Mitigation

- .1 Archeological surveillance is required along construction corridor only where outlined in the Environmental Screening.
- .2 Parking will be permitted in designated areas as directed.
- .3 Confine all work actively within the limits specified and outlined in construction plans.
- .4 Access to work areas will be via routes approved in advance.
- .5 When negligence on the part of the Contractor results in any damage or destruction of cultural resources, the

Contractor shall be responsible, at his/her expense, for complete restoration or rehabilitation to the satisfaction of the Departmental Representative.

- .6 Excavations will not be permitted beyond the identified corridor approved by archeology.
- .7 If any artifacts, cultural resources or structural features are located during construction activities, all work will stop in that area until the surveillance archeologist reviews the findings.
- .8 Temporary water supply will not impact on the grounds surface and will be located in the identified area approved by archeology.
- .9 Filtration systems due to sub-excavation will be located in those areas identified on construction plans and will require archeological approval if changes are required.

1.6 Definitions

- .1 Archeology: A set of theories, methods and techniques for the study of human behavior from material remains of past activities. Other sorts of evidence, such as documents, are used when available, but archeology deals with the recovery and analysis of physical evidence from on or below the surface of the ground and underwater. Archeological techniques are designed to recover the spatial and chronological relationships (i.e., artifacts that make up archeological sites. It is these relationships that form the essential basis for understanding archeological evidence.

1.7 Relics and Antiquities

- .1 Comply with CEAA Environmental screening (current screening).
- .2 Any artifact or items of historical significance uncovered during construction or maintenance and their associated archeological records, shall revert to Canada.

END

PART 1 - GENERAL

1.1 References and Codes

- .1 Perform Work in accordance with National Building Code of Canada (NBC) including amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
- .2 Perform Work in accordance with the EA for this project
- .3 Meet or exceed requirements of:
 - .1 Contract documents.
 - .2 Specified standards, codes and referenced documents.

1.2 National Parks Act

- .1 Perform Work in accordance with National Parks Act when projects are located within boundaries of National Park or within National Historic Sites.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

END

PART 1 - GENERAL

1.1 Inspection

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

1.2 Independent
Inspection Agencies

- .1 Independent Inspection/Testing Agencies will be engaged by Departmental Representative for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Departmental Representative.
- .2 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.

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

1.5 Rejected Work

- .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or execute in accordance with Contract Documents.
- .2 Make good other Contractor's work damaged by such removals or replacements promptly.



1.6 Reports

- .1 Submit 4 copies of inspection and test reports to Departmental Representative.
- .2 Provide copies to subcontractor of work being inspected or tested or manufacturer or fabricator of material being inspected or tested.

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 Departmental Representative and may be authorized as recoverable.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

END

PART 1 - GENERAL

1.1 Access

- .1 Provide and maintain adequate access to project site.
- .2 As required, build and maintain temporary roads during period of work. Parks Canada will approve prior to their use, any proposed temporary roads within the Park.
- .3 Upon completion of contract work, rehabilitate any temporary roads to the satisfaction of the Departmental Representative.
- .4 If authorized to use existing roads for access to project site, maintain such roads for duration of Contract and make good damage resulting from Contractor's use of roads.
- .5 Clean roads and parking areas where used by Contractor's equipment or employees' vehicles.

1.2 Site Signs

- .1 Safety and Instruction Signs and Notices:
 - .1 Signs and notices for safety and instruction shall be in both official languages Graphic symbols shall conform to CAN3-Z321-77.
 - .2 Maintenance and Disposal of Site Signs:
 - .1 Maintain approved signs and notices in good condition for duration of project, and dispose of offsite on completion of project or earlier if directed by Departmental Representative.
 - .2 No separate payment to be made for Project Identification Site Signs. Cost shall be deemed incidental to work.

1.3 Sanitary
Facilities

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

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

1.4 Removal of
Temporary
Facilities

- .1 Remove temporary facilities from site when directed by Departmental Representative.

END

PART 1 - GENERAL

1.1 References

- .1 Within text of each specifications section, reference may be made to reference standards. Conform to these reference standards, in whole or in part as specifically requested in specifications.
- .2 If there is question as to whether products or systems are in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.
- .3 Cost for such testing will be borne by Departmental 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, salvaged, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .2 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of work.
- .3 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve 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.

- .4 Should disputes arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.
- .5 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .6 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.3 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 all materials on flat, solid supports and keep clear of ground. Slope to shed moisture.
- .5 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.

1.4 Transportation

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

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

1.6 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 Departmental 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. Departmental 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 Departmental Representative, whose decision is final.

1.7 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.

1.8 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.

1.9 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/or building occupants and pedestrian and vehicular traffic.
- .2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

END

PART 1 - GENERAL

1.1 References

.1 NA

1.2 Project
Cleanliness

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, Other than that caused by Owner or other Contractors.
- .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
- .3 Clear snow and ice from access to site or facilities of the work, bank/pile snow in designated areas only.
- .4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .5 Provide suitable 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 outside the limits of the National Park at a location/facility approved by the Authority having jurisdiction.
- .8 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .9 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

1.3 Final Cleaning

- .1 When Work is substantially performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .3 Prior to final review remove surplus products, tools, construction machinery and equipment.
- .4 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
- .5 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
- .6 Remove dirt and other disfiguration from exterior surfaces.

1.4 Waste Management
and Disposal

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

PART 2 - PRODUCTS

2.1 NOT USED

END

PART 1 - GENERAL

1.1 Waste Management
Goals

- .1 Prior to start of Work conduct meeting with Owner to review and discuss Parks Canada's waste management plan and goals.
- .2 Accomplish maximum control of solid construction waste.
- .3 Protect environment and prevent environmental pollution damage.

1.2 References

- .1 Definitions:
 - .1 Class III: non-hazardous waste - construction renovation and demolition waste.
 - .2 Cost/Revenue Analysis Work plan (CRAW): intended as financial tracking tool for determining economic status of waste management practices.
 - .3 Demolition Waste Audit (DWA): relates to actual waste generated from project.
 - .4 Inert Fill: inert waste - exclusively asphalt and concrete.
 - .5 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.
 - .6 Recyclable: ability of product or material to be recovered at end of its lifecycle and re-manufactured into new product for reuse.
 - .7 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.
 - .8 Recycling: process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
 - .9 Reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes:
 - .1 Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.

- .2 Returning reusable items including pallets or unused products to vendors.
- .10 Salvage: removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.
- .11 Separate Condition: refers to waste sorted into individual types.
- .12 Source Separation: act of keeping different types of waste materials separate beginning from the point they became waste.
- .13 Waste Audit (WA): detailed inventory of estimated quantities of waste materials that will be generated during construction, demolition, deconstruction and/or renovation. Involves quantifying by volume/weight amounts of materials and wastes that will be reused, recycled or landfilled. Refer to Schedule A.
- .14 Waste Management Co-ordinator (WMC): contractor representative responsible for supervising waste management activities as well as coordinating required submittal and reporting requirements.

1.3 Storage, Handling and Protection

- .1 Store, materials to be reused, recycled and salvaged in locations as directed by Departmental Representative.
- .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 surface drainage, mechanical and electrical from damage and blockage.
- .5 Separate and store materials produced during project in designated areas.
- .6 Prevent contamination of materials to be salvaged and reused and handle materials in accordance with requirements for acceptance by designated processing facilities.
 - .1 On-site source separation is recommended.

- .2 Remove co-mingled materials to offsite processing facility for separation.
- .3 Obtain waybills, receipts and/or scale tickets for separated materials removed from site.
- .4 Materials reused on-site are considered to be diverted from landfill and as such are to be included in all reporting.

1.4 Disposal of
Wastes

- .1 Do not bury rubbish or waste materials.
- .2 Do not dispose of waste, volatile materials, mineral spirits, oil, paint thinner into waterways, storm, or sanitary sewers.
- .3 Contractor is responsible for safe disposal of waste off-site in an environmentally acceptable manner and in accordance with all applicable regulations.

1.5 Scheduling

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

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

END

PART 1 - GENERAL

1.1 References

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

1.2 Administrative Requirements

- .1 Acceptance of Work Procedures:
 - .1 Contractor's Inspection: Contractor: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
 - .1 Notify Departmental Representative in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
 - .2 Request Departmental Representative inspection.
 - .2 Departmental Representative Inspection:
 - .1 Departmental Representative and Contractor to inspect Work and identify defects and deficiencies.
 - .2 Contractor to correct Work as directed.
 - .3 Completion Tasks: submit written certificates that tasks have been performed as follows:
 - .1 Work: completed and inspected for compliance with Contract Documents.
 - .2 Defects: corrected and deficiencies completed.
 - .3 Equipment and systems: tested, adjusted and balanced and fully operational.
 - .4 Operation of systems: demonstrated to Departmental Representative's personnel.
 - .5 Work: complete and ready for final inspection.
 - .4 Final Inspection:
 - .1 When completion tasks are done, request final inspection of Work by Departmental Representative, and Contractor.
 - .2 When Work incomplete according to Departmental Representative, complete outstanding items and request re-

inspection.

1.3 Final Cleaning

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

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

END

PART 1 - GENERAL

1.1 Administrative
Requirements

- .1 Pre-warranty Meeting:
 - .1 Convene meeting one week prior to contract completion with contractor's representative and Departmental Representative, in accordance with Section 01 31 19 - Project Meetings to:
 - .1 Verify Project requirements.
 - .2 Review warranty requirements and manufacturer's installation instructions.
 - .2 Departmental Representative to establish communication procedures for:
 - .1 Notifying construction warranty defects.
 - .2 Determine priorities for type of defects.
 - .3 Determine reasonable response time.

1.2 Action and
Informational
Submittals

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Two weeks prior to Substantial Performance of the Work, submit to the Departmental Representative, four final copies of operating and maintenance manuals.
- .3 Provide evidence, if requested, for type, source and quality of products supplied.

1.3 Format

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

- .5 Arrange content by systems, 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 or typewritten data.
- .8 Drawings: provide with reinforced punched binder tab.
 - .1 Bind in with text; fold larger drawings to size of text pages.

1.4 Contents -
Project Record
Documents

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

1.5 As -Built
Documents and
Samples

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

1.6 Recording
Information on
Project Record
Documents

- .1 Record information on set of black line opaque drawings, provided by Departmental Representative.
- .2 Use felt tip marking pens, maintaining separate colours for each major system, for recording information.

- .3 Record information concurrently with construction progress.
 - .1 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, field test records, required by individual specifications sections.
- .7 Provide digital photos, if requested, for site records.

1.7 Equipment and Systems

- .1 For each item of equipment and each system include description of unit or system, and component parts.
 - .1 Give function, normal operation characteristics and limiting conditions.
 - .2 Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.

- .2 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences.
 - .1 Include regulation, control, stopping, shut-down, and emergency instructions
 - .2 Include summer, winter, and any special operating instructions.
- .3 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- .4 Provide servicing and lubrication schedule, and list of lubricants required.
- .5 Include manufacturer's printed operation and maintenance instructions.
- .6 Include sequence of operation by controls manufacturer.
- .7 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- .8 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- .9 Include test and balancing reports as specified in Section 01 45 00 - Testing and Quality Control.
- .10 Additional requirements: as specified in individual specification sections.

1.8 Materials and Finishes

- .1 Building products, applied materials, and finishes: include product data, with catalogue number, size, composition, and colour and texture designations.
 - .1 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.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

END

PART 1 - GENERAL

1.1 Related Documents

- .1 Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 Scope of Work

- .1 Removal of existing construction to permit the construction of the New Work. Extent of removals shall encompass everything required to facilitate the creation/construction of what is indicated and intended, as the new work.
- .2 Perform all removal of existing materials and assemblies and make good as indicated on the drawings and specified herein. Making good means restoration to the extent that the new work will be complete and finished in all respects.
- .3 See list of Demolition where applicable. Items and assemblies shown dotted shall be removed completely except as indicated.
- .4 Demolition notes on the drawings are provided to assist in establishing items to be removed to ensure the new work fits. The new work governs and demolition drawing notes and specifications are to be read in conjunction with the new work requirements.

1.3 Related Work

- .1 Division 1: All Sections

1.4 Codes and Standards

- .1 Carry out demolition work in accordance with Canadian Construction Safety Code (latest edition), provincial and local codes, regulations and requirements of insurance carriers providing coverage for this work.
- .2 Comply with CSA S350-M1980 Code of Practice for Safety in Demolition of Structures.

- .3 Do welding in accordance with CSA W59-1984 unless specified otherwise.

1.5 Protection

- .1 Prevent movement, settlement or damage of adjacent construction. Make good damage and be liable for damage or injury caused by demolition.
- .2 Provide necessary shoring to protect construction adequately during the demolition process.
- .3 Take precautions to support structures and if safety of new or existing construction appears to be endangered, cease operations and notify Departmental Representative.
- .4 Provide protection from falling debris. Prevent debris from blocking services, exits, etc.
- .5 Provide protection to interior finishes, where applicable.
- .6 Provide security protection. Refer to Division 1 requirements.
- .7 Protect existing items designated to remain, to be reinstalled and as noted for salvage and re-use.

1.6 Recording of Existing Conditions

- .1 Prior to demolition, take photographs and make notes to indicate existing conditions, to become familiar with the scope of demolition work and to note items to be handed to Owner after removal from the premises.
- .2 Obtain signature of Departmental Representative on notes and photographs and submit two sets of copies to Departmental Representative.

1.7 Restrictions on Dust, Noise

- .1 Comply with requirements of Division 1 to enable sequential occupancy of the facility. The work

schedule is to be coordinated with the facility staff. The Facility is to remain open during construction. Stages of roof and siding work is to be done sequentially around the facility to maintain public access to as much area as possible, at once, during the tourist season.

1.8 On-Site Storage of Removal Items

- .1 Store, where directed by Departmental Representative, items designated for salvage and re-use in the renovation work or for use by the Owner otherwise.

1.9 Fees

- .1 Pay all required fees, including dumping fees. Store, where directed by Owner, items designated for salvage and re-use in the renovation work or for use by the Owner otherwise.

PART 2 - PRODUCTS

2.1 Materials

- .1 Unless otherwise specifically approved, use only new, solid lumber, utility grade or better, to construct temporary barricades.
- .2 Materials for Falsework: to CSA S269.1-1975.
- .3 Materials for Scaffolding: to CSA S269.2-M1987.
- .4 Welding Materials: to CSA W59-1984.

PART 3 - EXECUTION

3.1 Preparation

- .1 Prior to beginning work, inspect all areas of the work and identify objects designated to be turned over to the Owner or to be salvaged or re-used in renovation work.
- .2 Locate services which may be affected by demolition work and provide required protection. Disconnect services as required by the work using qualified tradesman.

- .3 Cooperate with the Departmental Representative, provide for sequential occupancy of existing building as specified under Division 1.
- .4 Comply with Dept. of Health regulations.

3.2 Demolition Work

- .1 Demolish and/or remove parts, assemblies and items of existing building as indicated and required, to permit and accommodate the construction and renovation work, and to complete the work of this Contract.
- .2 Remove and protect those items identified for reinstallation in the finished assembly or to be handed to the Owner for use otherwise.
- .3 Provide containers for the collection of demolished materials which will be discarded.
- .4 Remove existing equipment, finished construction, services and obstacles where required for refinishing or making good of existing surfaces to remain exposed and replace as work progresses.
- .5 At end of each day's work, leave work in safe condition so that no part or material is in danger of falling or of causing other hazard. Protect interiors from external elements at all times.
- .6 Demolish to minimize dusting. Provide dust barrier partitions, the purpose of which is to not permit the passage of any dust, through the window and door openings.
- .7 Carefully remove and lower heavy objects.
- .8 Do not disturb adjacent items and surfaces designated to remain in place, unless required to complete new work.

3.3 Disposal

- .1 Selling or burning of materials on site is not permitted.
- .2 Dispose of all demolished materials not designated for salvage or re-use in the work, off of property. Comply with authorities having jurisdiction.
- .3 Remove all debris from site; leave site in a neat, orderly condition. Tarp all containers.
- .4 Stockpile and store materials to be reinstalled at location(s) approved by the Departmental Representative.
- .5 Turn items over to the Owner where indicated at site.
- .6 Remove items from building in designated area only or as directed by Departmental Representative. Provide disposal chutes and dumpsters with suitable tarp coverings only where indicated and/or where approved by Departmental Representative.

3.4 Miscellaneous Removals and Re-Installation

- .1 Remove all miscellaneous items noted and as required to carry out the work of this and other sections. Take precautions to prevent damage to items being re-installed. Remove fastenings. Patch fastener holes prior to the installation of new finishes.
- .2 Provide required fastenings. Reinstall unless noted otherwise. Use existing fastener holes where practicable. Drill new holes where required; do not use impact type tools. Reinstall items square, plumb and aligned true to building lines.
- .3 Where noted or specified, turn items over to other trades for reinstallation.

3.5 Removal of Existing

Exterior Finishes

- .1 Remove existing finishes to extent indicated, and as required by the work. Patch surfaces which will be exposed in finished work and make good.

3.6 Restoration

- .1 Mechanical and electrical disconnection's, removal and reinstallation shall be carried out by their respective trades to the requirements of this Section.

3.7 General Patching
and Making Good

- .1 Carry out patching and making good of assemblies and finish surfaces to remain in the completed work. Include all openings and damage caused by demolition work of all trades.
- .2 Blend patching with existing surfaces. Patching shall be better quality workmanship than adjacent surfaces being blended to.
- .3 Patch and restore openings and damage to finish surfaces which will remain exposed in the completed work.

3.8 Reinstallation of
Removed Items

- .1 Reinstall existing items as indicated except where specified to be reinstalled under other sections.
- .2 Protect items for reinstallation. Restore finish where damaged. Re-adjust operating parts for correct operation. Modify as required to suit new work.
- .3 Use original fasteners or suitable fasteners to match the historic construction techniques.

END

PART 1 - GENERAL

1.2 Related
Sections

- .1 Section 02 06 00 Selective Demolition
- .2 Section 04 05 00 Common Work Results for Masonry
- .3 Section 06 08 00 Carpentry

1.2 References

- .1 Canadian Standards Association (CSA International)
 - .1 CAN/CSA A23.1-09/A23.2-09, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
 - .2 CAN/CSA A179-04, Mortar and Grout for Unit Masonry.
 - .3 CSA-A371-04, Masonry Construction for Buildings.

1.3 Definitions

- .1 Raking: the removal of loose/deteriorated mortar until sound mortar or 2x the joint thickness is reached, but not less than 50mm.
- .2 Repointing: filling and finishing of masonry joints from which mortar is missing, or has been raked out.
- .3 Tooling: finishing of masonry joints using tool to provide final contour.
- .4 Repair: using adhesives to rebond sections of fractured masonry.
- .5 Consolidation: strengthening masonry units to prevent deterioration (spalling).

- .6 Descaling: the removal of loose portions of the masonry (usually spalled area) through impact with a bush hammer or similar device.

1.4 System Description

- .1 Work of this Section includes but is not limited to:
 - .1 Visually inspecting for obvious signs of deteriorated masonry and testing/verification of masonry joints.
 - .2 Raking and repointing all joints in existing stone chimneys.
 - .3 Preparation of masonry surface including joints surface cleaning, flushing of voids and open joints, and masonry wetting.
 - .4 Repointing all masonry joints.
 - .5 Removal of loose portions on stone surface.
 - .6 Resetting of dislodged stone.
 - .7 Ensuring cure of mortar.
 - .8 Replacement of deteriorated or missing stones.
 - .9 Recapping of chimneys.

1.5 Submittals

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

1.6 Delivery, Storage and Handling

- .1 Packing, shipping, handling and unloading:
 - .1 Deliver, store, handle and protect materials in accordance with Section 01 61 00 - Common Product Requirements.
 - .2 Store cementitious materials and aggregates in accordance with CAN/CSA A23.1.
 - .3 Store lime putty in plastic lined sealed drums.
 - .4 Keep material dry. Protect from weather, freezing and contamination.
 - .5 Ensure that manufacturer's labels and seals are intact upon delivery.
 - .6 Remove rejected or contaminated material from site.

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

1.7 Ambient Conditions

- .1 In accordance with Section 04 05 00 - Common Work Results for Masonry.

PART 2 - PRODUCTS

2.1 Materials

- .1 Mortar: in accordance with CAN/CSA A179 and Section 04 03 08 - Historic - Mortaring.

PART 3 - EXECUTION

3.1 Site Verification of Conditions

- .1 As noted in clause 1.8 Existing Conditions above.

3.2 Repair

- .1 Match existing historic mortar colour and masonry techniques and methods.
- .2 Perform work in accordance with CSA-A371
- .3 Protection and installation requirements as specified in Section 04 05 00 - Common Work Results for Masonry and Section 04 03 08 Historic - Mortaring.
- .4 Replace stones not suitable for repair, as directed by Departmental Representative.

3.3 Raking Joints

- .1 Use manual raking tool for the removal of loose mortar until sound mortar or 2x the joint thickness, but not less than 50 mm, leaving square corners and a flat surface at back of cut. Clean out voids and cavities encountered. Use of power tools is not permitted.
- .2 Ensure that no stones are chipped, altered or damaged by work to remove mortar.
- .3 Clean by compressed air, with non-ferrous brush or by moderate water wash surfaces of joints without damaging texture of all exposed joints or masonry units.
- .4 Flush open joints and voids; clean open joints and voids with low pressure water and if not free draining blow clean with compressed air.
- .5 Leave no standing water.

3.4 Repointing

- .1 Dampen masonry to prevent premature drying of mortar. Surfaces should be cool and damp but not wet or holding water. On highly porous substrate surfaces, dampening should begin on the day previous to application. Control dampening by using fine mist spray.
- .2 Keep masonry damp while pointing is being performed.
- .3 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.
- .4 Tool and compact using jointing tool to force mortar into joint.
- .5 Build-up pointing in layers not exceeding 12 mm in depth. Allow each layer to set before applying subsequent layers. Maintain joint width.

- .6 Tool joints to match existing profile or as directed by Departmental Representative.
- .7 Remove excess mortar from stone face before it sets.
- .8 Damp cure:
 - .1 Provide damp cure for pointing mortars.
 - .2 Install and maintain wetted burlap protection during the curing process for minimum of 3 days.
 - .3 Wet mist burlap only. Endure no direct spray reaches surface of curing mortar.
 - .4 Shade areas of work from direct sunlight and maintain constant dampness of burlap.
- .9 Protect from drying winds. Pay particular attention at corners of structure.

3.5 Resetting

- .1 Fix dislodged stones in correct location with water soaked hardwood or softwood wedges, or firm mortar.
- .2 Insert and compress firm mortar to within 50 mm of pointing surface. Allow mortar to set 24 hours.
- .3 Pull out wood wedges when dried and shrunken.
- .4 Point to surface in two layers.

3.6 Cleaning

- .1 In accordance with Section 04 05 00 - Common Work Results for Masonry.

3.7 Protection of Completed Work

- .1 In accordance with Section 04 05 00 - Common Work Results for Masonry.

PART 1 - GENERAL

1.1 Section

Includes

- .1 Mortar for historic masonry.

1.2 Related Work

- .1 Section 04 03 07 - Historic - Masonry Repointing and Repair.
- .2 Section 04 05 00 - Common Work Results for Masonry.

1.3 References

- .1 CSA-A179-04 - Mortar and Grout for Unit Masonry.
- .2 CSA-A371-04 - Masonry Construction for Buildings.
- .3 CAN/CSA-A3000-03 - Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
- .4 ASTM C150 - Standard Specification for Portland Cement.
- .5 ASTM C207 - Specification for Hydrated Lime for Masonry.
- .6 CSA-S304.1-04 - Design of Masonry Structures.

1.4 Submittals for Review

- .1 Submit in accordance with Sections 01 33 00.
- .2 Include design mix, indicate whether the Proportion or Property specification of CSA-A179 is to be used, required environmental conditions, and admixture limitations.
- .3 Samples: Submit two (2) samples of mortar, illustrating mortar colour and colour range.

1.5 Laboratory
Testing

.1 N/A

1.6 Delivery, Storage
and Handling

.1 Maintain packaged materials clean, dry, and protected against dampness, freezing, and foreign matter.

1.7 Environmental
Requirements

.1 Cold and Hot Weather Requirements: CSA A371 - Masonry Construction for Buildings.

PART 2 - PRODUCTS

2.1 Materials

.1 Water: potable, clean and free from contaminants.

.2 Sand: to ASTM C 144.

.1 Sharp, screened and washed pit sand, free of organic material, with final grading and colour to approval of Departmental Representative.

.2 Custom blend sands where necessary to provide appropriate colour match and gradation to approval of Departmental Representative.

.3 Select and blend sands to match colour, texture and grain size of existing sand.

.3 Portland cement: to CAN/CSA-a3000 grey or white as required to achieve acceptable match with existing mortar.

.4 Masonry cement: to CAN/CSA-a3000 grey or white as required to achieve acceptable match with existing mortar.

.5 Hydrated lime: Dolomitic finishing lime, Type to be determined, to ASTM C207.

- .6 Colour:
 - .1 Ground coloured natural aggregates, and/or coloured sand to match existing. Use minimum amount necessary.
 - .2 Maximum colour: 2% of total volume of aggregate.
 - .3 Match core of freshly broken sample of original mortar.
- .7 Additives:
 - .1 Obtain written approval of Departmental Representative before using additives.
- .8 Air entrainment:
 - .1 Vinsol resin type: to ASTM C 260.

2.2 Mortar Mixes

- .1 Existing mortar mix is unknown. New mortar to be Mortar for pointing and bedding: 1:1:5, Portland:lime:sand. Mortar compressive strength: minimum 8 MPa, maximum 15 MPa at 28 days. Dye mortar to be a consistent colour that match's existing colour.
- .2 Provide proposed mortar mix designs, and confirmation of strength performance to be submitted, to Departmental Representative for approval. Mix design & pre-construction testing to be at the Contractor's cost.

2.3 Mortar Mixing

- .1 Mix mortar ingredients in accordance with CSA A179 in quantities needed for immediate use.
- .2 Add mortar colour and admixtures in accordance with manufacturer's written instructions. Provide uniformity of mix and colouration.
- .3 Do not use antifreeze liquids, calcium chloride, frost inhibitors based on calcium chloride, salts or other

substances used for lowering the freezing point or accelerating setting time.

- .4 If moisture is lost by evaporation, re-temper with water in quantities and at intervals sufficient to restore workability
- .5 Use mortar within 1 1/2 hours after mixing at temperatures of 25 degrees C or higher, or 2 1/2 hours at temperatures less than 25 degrees C within period specified by mortar manufacturer.

2.4 Allowable Tolerances

- .1 Using approved mortar design mixes, provide minimum compression strength within the allowable range recommended by the tests, cured for 7 and 28 days.
- .2 If mortar fails to meet the 7 day compressive strength requirements, but meets the 28 day compressive strength requirement, it is acceptable. If mortar fails to meet the 7 day compressive strength requirement, but its strength at 7 days exceeds two thirds of the value required for the 7 day strength, contractor may elect to continue work at his own risk while awaiting the results of the 28 day tests, or to take down the work affected.

PART 3 - EXECUTION

3.1 General Preparations

- .1 Special Techniques:
 - .1 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.
 - .2 Prepare measuring boxes to ensure accurate proportioning of materials.
 - .3 Maintain separate measuring boxes for each component.

.4 Ensure sand is tested and volume corrected for bulking.

3.2 Preparation

.1 Apply bonding agent to existing surfaces as required.

3.3 Installation

.1 Install mortar in accordance with CSA A179.

3.4 Field Quality Control

.1 Perform testing in accordance with Section 01 45 00.

.2 Test mortar in accordance with CSA A179.

END

PART 1 - GENERAL

1.1 Related
Sections

- .1 Section 04 03 08 Historic - Mortaring.
- .2 Section 04 03 07 Historic - Masonry Repointing and Repair.
- .3 Section 06 08 00 Carpentry

1.2 References

- .1 Canadian Standards Association (CSA International)
 - .1 CSA-A165 Series-04, Standards on Concrete Masonry Units.
 - .2 CSA A179-04, Mortar and Grout for Unit Masonry.
 - .3 CSA-A371-04, Masonry Construction for Buildings.
- .2 International Masonry Industry All-Weather Council (IMIAC)
 - .1 Recommended Practices and Guide Specification for Hot and Cold Weather Masonry Construction.

1.3 Administrative
Requirements

- .1 Pre-installation meetings: comply with Section 01 31 19 - Project Meetings. Conduct pre-installation meeting one week prior to commencing work of this Section to:
 - .1 Verify project requirements, including mock-up requirements.
 - .2 Verify substrate conditions.
 - .3 Co-ordinate products, installation methods and techniques.
 - .4 Sequence work of related sections.

- .5 Co-ordinate with other building subtrades.
- .6 Review manufacturer's installation instructions.
- .7 Review masonry cutting operations, methods and tools and determine worker safety and protection from dust during cutting operations.
- .8 Review warranty requirements.

- .2 Sequence with other work in accordance with Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart.

1.4 Action Submittals

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Provide manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, limitations and colours.
 - .2 Provide two copies of Workplace Hazardous Materials Information System (WHMIS)- Material Safety Data Sheets (MSDS) in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .3 Mortar Samples:
 - .1 In accordance with Section 04 03 08 Historic - Mortaring.

1.5 Information Submittals

- .1 Provide manufacturer's product certificates certifying materials comply with specified requirements.
- .2 Test and Evaluation Reports:
 - .1 Provide certified test reports in accordance with Section 01 29 00 - Payment Procedures for Testing Laboratory Services.

- .2 Test reports to certify compliance of mortar and grout with specified performance characteristics and physical properties.
- .3 Installation Instructions: provide proposed methods for reinstallation of existing flashing, handling, safety and cleaning. Coordinate with Section 06 08 99 Carpentry.
- .4 Experience Records: submit complete resume of experience with historic masonry structures 10 days prior to commencement of work to the Departmental Representative for acceptance:
 - .1 masonry contractor,
 - .2 supervising stone mason(s),
- .5 Submit proposed lime mortar masonry instructions and best practices to be used prior to installations with lime mortar.

1.6 Quality Assurance

- .1 Masonry Contractor:
 - .1 Use single Masonry Contractor for all masonry work.
 - .2 Masonry contractor to have good level of understanding of structural behavior of masonry walls when masonry work involves dismantling, and replacing or repairing stones which are part of structural masonry work.
 - .3 All masonry work shall be executed under the continuous supervision and direction of the identified supervising stone mason.

- .2 Masons:
 - .1 Mason to have certificate of qualification with in historic stone masonry work.
 - .2 Masons to have proof of experience for restoration masonry work.
- .3 Departmental Representative has right to reject masons who do not demonstrate appropriate abilities or experience. Refer to Section 01 61 00 - Common Product Requirements.
- .4 Masons employed on this project throughout course of project must meet above requirements. Where, during course of project, masons leave work force, replacement masons must also meet requirements.
- .5 Obtain approval from Departmental Representative for changes to qualified personnel.
- .6 Mock-ups:
 - .1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control.
 - .2 Repair/repoint the chimney as a mock-up to show pointing, jointing, coursing, mortar and workmanship to match existing.
 - .3 Mock-up used to judge workmanship, substrate preparation, operation of equipment and material application.
 - .4 Construct mock-up where directed by Departmental Representative.
 - .5 Allow 5 business days for inspection of mock-up by Departmental Representative and multi-disciplinary team before proceeding with work.
 - .6 When accepted by Departmental Representative, mock-up will demonstrate minimum standard for this work. Mock-up may remain as part of finished work.
 - .7 Start work only upon receipt of written approval of mock-up by Departmental Representative.
- .7 The following are considered deficient items, and are in addition to other requirements of the work:
 - .1 Mortar shrinkage cracks between units,

- .2 Unfilled joints,
- .3 Poor colour or texture of joints or masonry units.
- .4 Dusting or efflorescence of joints or masonry units.
- .5 Surface discolouration, colour variance or crumbling of mortar.
- .6 Failure of anchors.
- .7 Sloppy fitting, bedding, jointing, poor levelling of masonry units.
- .8 Failure to match adjacent work.
- .9 Failure to match approved mock-up.

1.7 Delivery, Storage and Handling

- .1 Deliver materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .3 Storage and Handling Protection:
 - .1 Keep materials dry until use except where wetting of stone is specified.
 - .2 Store under waterproof cover on pallets or plank platforms held off ground by means of plank or timber skids.
 - .3 Packaging Waste Management: Remove for reuse and return of pallets, crates, and packaging materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal.

1.8 Ambient Conditions

- .1 Maintain masonry temperature between 10 degrees C and 25 degrees C for duration of work.
- .2 When ambient temperature below 10 degrees C:
 - .1 Store cements and sands for immediate use in heated enclosure to Section 01 56 00 Temporary Barriers and Enclosures. Allow cement and sands to reach minimum temperature of 10 degrees C.

- .2 Heat and maintain water to minimum of 20 degrees C and maximum of 30 degrees C:
 - .1 At time of use temperature of mortar to be minimum of 15 degrees C and maximum of 30 degrees C.
 - .2 Do not mix cement with water or with aggregate or with water-aggregate mixtures having higher temperature than 30 degrees C.
 - .3 Maintain aggregate temperature between 10 degrees C and 30 degrees.
 - .4 Maintain mortar mix between 10 degrees and 40 degrees.
 - .5 Provide hot water to a maximum 90 degrees C on site during cold weather.
- .3 Maintain temperature of masonry above 10 degrees C for minimum of 28 days after mortar is installed, or minimum of 12 weeks prior to freezing temperatures when using lime mortar.

1.9 Warranty

- .1 For Work in this Section 04 05 00 - Common Work Results for Masonry, 12 months warranty period is extended to 24 months.

PART 2 - PRODUCTS

2.1 Materials

- .1 Masonry materials are specified elsewhere in related Sections:
 - .1 Section 04 03 08 Historic - Mortaring.

PART 3 - EXECUTION

3.1 Installers

- .1 Experienced and qualified masons to carry out dismantling, cleaning, erection, assembly and installation of masonry, building features and appurtenances. Coordinate with Section 06 08 00 Carpentry and other trades as required.

3.2 Manufacturer's Instructions

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

3.3 Examination

- .1 Examine conditions, substrates and work to receive work of this Section.
 - .1 Co-ordinate with Section 01 71 00 - Examination and Preparation.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation after unacceptable conditions have been remedied.
- .2 Verification of Conditions:
 - .1 Verify that:
 - .1 Substrate conditions which have been previously installed under other sections or contracts, are acceptable for product installation prior to installation.
 - .2 Field conditions are acceptable and are ready to receive work.
 - .3 Built-in items are in proper location, and ready for roughing into masonry work.
 - .2 Commencing installation means acceptance of existing substrates.

3.4 Preparation

- .1 Surface Preparation: prepare surfaces in accordance with manufacturer's written recommendations and co-

ordinate with Section 01 71 00 - Examination and Preparation.

.1 Dampen masonry to prevent premature drying of mortar. Surfaces should be cool and damp but not wet or holding water. On highly porous substrate surfaces, dampening should begin on the day previous to application. Control dampening by using fine mist spray.

.2 Establish and protect lines, levels, coursing, and openings.

.3 Protect adjacent materials from damage and disfiguration.

3.5 Installation

.1 Do masonry work in accordance with CSA-A371 except where specified otherwise. Coordinate with Section 06 08 99 Carpentry and other trades as required.

.2 Follow instructions and best practices for lime mortar masonry as submitted and reviewed by Departmental Representative.

.3 Build masonry plumb, level, and true to line, respecting construction tolerances permitted by CSA-A371.

.1 Using records of existing conditions compiled during dismantling of chimneys as required.

.4 Where requested in writing, and approved by Departmental Representative, adjust masonry plumb, level, and line to blend masonry into existing conditions.

3.6 Construction

.1 Stone chimneys:

.1 Reconstruct original stones in original locations, using numbering, marking and positioning system as required.

.2 Chipped, cracked and otherwise damaged stones to be repaired, or replaced with undamaged stones as directed by the Departmental Representative, where stones are beyond reasonable repair.

.3 Ensure all embedded items are installed in original locations.

- .4 Keep bedding mortar back 20mm from face of masonry, for pointing with coloured mortar.
- .5 Point joints to match existing using coloured pointing mortar, as required.
- .6 Chimney work to be coordinated with roofing work. Chimneys to be repointed prior to any roof work.

.2 Cutting:

- .1 Only where instructed by Departmental Representative, cut out recessed or built-in objects.
- .2 Make cuts straight, clean, and free from uneven edges.

.3 Interface with other work:

- .1 Provide openings in existing work as indicated.
- .2 Openings in walls: to be approved by Departmental Representative.
- .3 Make good existing work. Use materials to match existing.

3.7 Site Tolerances

- .1 Tolerances in notes to CSA-A371 apply.

3.8 Field Quality Control

.1 Site Tests, Inspection:

- .1 Perform field inspection and testing in accordance with Section 01 45 00 - Quality Control.
- .2 Notify inspection agency minimum of 24 hours in advance of requirement for tests.
- .3 Schedule site visits to review work at stages listed:
 - .1 After delivery and storage of products, and when preparatory work on section is complete, but before installation begins.
 - .2 Twice during progress of work at 25% and 60% complete.
 - .3 Upon completion of work, after cleaning is carried out.
 - .4 Obtain reports within three days of review and submit immediately to Departmental Representative.

- .2 Ensure minimum standard for masonry work is representative of approved mock-up.

3.9 Cleaning

- .1 Clean in accordance with Section 01 74 11 - Cleaning.
- .2 Progress Cleaning: in accordance with related masonry sections.
 - .1 Remove droppings and splashing using clean sponge and water.
 - .2 Clean masonry with low pressure clean water and soft natural bristle brush.
 - .3 Obtain approval of Departmental Representative prior to using other cleaning methods for persistent stains.
 - .4 Concrete materials: provide appropriate area on job site where testing laboratory equipment, and other concrete equipment can be safely washed. Contractor is responsible for cleanup of this area once work is completed.
- .3 Final Cleaning:
 - .1 Perform cleaning after installation to remove construction and accumulated environmental dirt.
 - .2 Upon completion of installation and verification of performance of installation, remove surplus materials, rubbish, tools and equipment barriers.
- .4 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

3.10 Protection

- .1 Temporary Bracing:
 - .1 Provide temporary bracing of masonry work during and after erection until permanent lateral support is in place.
 - .2 Bracing to be approved by Departmental Representative.
- .2 Moisture Protection:
 - .1 Keep masonry dry using waterproof, non-staining coverings that extend over walls and down sides sufficient to protect walls from wind driven rain, until completed and protected by flashing or other permanent construction.
 - .2 Protect adjacent finished work against damage which may be caused by on-going work.
- .3 Air Temperature Protection: protect completed masonry as detailed in 1.8 Ambient Conditions.

3.11 Protection of
Completed Work

- .1 Cover completed and partially completed work not enclosed or sheltered at end of each work day.
 - .1 Membranes should be extended to 0.5m over surface area of work and be tightly installed to prevent finished work from drying out too quickly.
 - .2 Maintain tarps in place for minimum of 2 weeks.
 - .3 Ensure bottoms of tarps permit airflow to reach mortar in joints.
 - .4 Anchor coverings securely in position.
- .2 Damp cure:
 - .1 Provide damp cure for pointing mortars.
 - .2 Install and maintain wetted burlap protection during the curing process for minimum of 3 days.
 - .3 Wet mist burlap only. Endure no direct spray reaches surface of curing mortar.
 - .4 Shade areas of work from direct sunlight and maintain constant dampness of burlap.
- .3 Protect from drying winds. Pay particular attention at corners of structure.
- .4 Maintain ambient temperature of 10 degrees C for:
 - .1 minimum 7 days in summer,
 - .2 minimum 28 days in cold weather conditions using dry heated enclosures.
 - .3 minimum 12 weeks prior to freezing temperatures when using lime mortar.

END

PART 1 - GENERAL

1.1 Related Sections

- .1 Section 01 35 29.06 Health & Safety Requirements.
- .2 Section 07 27 00 Applied Roof Air Vapour Barrier.
- .3 Section 07 28 00 Sheet Air Barrier.
- .4 Section 07 31 29 Wood Shingles.

1.2 Administrative
Requirements

- .1 Review all work with Departmental Representative to verify project requirements.
- .2 Review sequence of roof work with Departmental Representative to verify project scheduling.

1.3 References

- .1 Canadian Standards Association (CSA International)
 - .1 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.
 - .2 CAN/CSA-O141-05(R2009), Softwood Lumber.
- .2 National Lumber Grades Authority (NLGA)
 - .1 Standard Grading Rules for Canadian Lumber 2000.
- .3 Architectural Woodwork Manufacturers Association of Canada (AWMAC) and Architectural Woodwork Institute (AWI)
 - .1 Architectural Woodwork Quality Standards Illustrated, 8th edition, Version 1.0 2003.

1.4 Quality Assurance

- .1 Lumber identification: by grade stamp of an ASSURANCE agency certified by Canadian Lumber Standards Accreditation Board.

1.5 Submittals

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit shop drawings for approval by Departmental Representative:
 - .1 Proposed marking and recording system for siding & trim work to be carefully removed, stored and reinstalled.
 - .2 Indicate details of construction, profiles, jointing, fastening and other related details.
 - .1 Indicate suppliers, materials, thicknesses, finishes and hardware.

1.6 Delivery, Storage and Handling

- .1 Deliver, handle, store and protect materials in accordance with Section 01 61 00 - Common Product Requirements.
 - .1 Protect materials against dampness during and after delivery.
 - .2 Store materials in ventilated areas, protected from extreme changes of temperature or humidity.
- .2 Removals: Coordinate removals and storage with Section 02 06 00 Selective Demolition.
- .3 Protect all historic woodwork, building features and appurtenances during removal process. Store in area protected from damage and weather. Identify with sufficient detail as required for resetting in original conditions.

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

PART 2 - PRODUCTS

2.1 Lumber Material

- .1 New roof boards are supplied by Parks Canada as noted on the Drawings.
- .2 Historic details for the re-installation.
 - .1 Match existing materials, dimensions and finish to replicate existing components.
 - .2 Use lumber mill specializing in historic lumber replication. Provide supplier contact information for Record Drawings.
 - .3 Provide adequate samples to lumber mill for identification and preparation of samples.
 - .4 Submit samples to Departmental Representative for review and approval prior to use.
 - .1 All lumber, other than siding and roof boards, as required to perform the re-siding work.
- .4 Lumber: unless specified otherwise, softwood, moisture content 19% or less in accordance with following standards:
 - .1 CAN/CSA-0141.
 - .2 NLGA Standard Grading Rules for Canadian Lumber.
- .5 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.

2.2 Accessories

- .1 Nails, spikes and staples: to CSA B111, as approved by Departmental Representative.
 1. Roofing screws to be Stainless steel.
 2. Shingle nails to be Stainless 316 nails.
 3. Siding nails to be Tremont decorative wrought head hot dip galvanized, 76mm long. Confirm length and style on site.
 4. All other fasteners to be stainless steel unless otherwise indicated.
- .2 Bolts: match existing or as approved by Departmental Representative.
- .3 Underlayment:
 - .1 Rigid 12 mm thick PVC sheet, nailed to sheathing.
 - .2 1220 x 2440 sheet size.
 - .3 Acceptable Product: Vent Grid 12.
- .4 Air/Vapour Barriers as per appropriate sections.
- .5 Wood preservative: Sico 774-444, Polyprep 774-188 - or approved equal.

PART 3 - EXECUTION

3.1 General

- .1 Provide careful removal and reinstallation of historic roof boards and trim work as required. Repair damage caused during removals to satisfaction of Departmental Representative.
- .2 All salvaged wood and new wood to have all end cuts treated with wood preservative.

3.2 Removals

- .1 Carefully remove existing roof boards and trim work as required to perform work. Protect, salvage and store historic items for reinstallation. Clean and repair as required prior to storage. Identify with sufficient detail as required for resetting to original conditions.

- .2 Review existing conditions with Departmental Representative prior to commencing work.
- .3 Coordinate removals and storage with Section 02 06 00 Selective Demolition.
- .4 Protect and store salvaged materials to facilitate their resetting. Organize and store in manner that can be readily accessed.
- .5 Discard any rotten material once deemed unfit to re-use.

3.3 Installation

- .1 Comply with requirements of NBC, supplemented by the following paragraphs.
- .2 Match historic construction techniques.
- .3 Install siding and trim work, backing, nailers, curbs and other wood supports as required.
- .4 Reinstall to original conditions all components of the siding work.
- .5 Stagger joints when blending new siding with existing.

3.4 Erection

- .1 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.
- .2 Match existing materials and construction. Receive approvals from Departmental Representative prior to commencing work.

3.5 Finishing Carpentry

- .1 Do finish carpentry to Quality Standards of the Architectural Woodwork Manufacturers Association of Canada (AWMAC), except where specified otherwise.
 - .1 Scribe and cut as required, fit to abutting walls, and surfaces, fit properly into recesses and to

accommodate piping, columns, fixtures, outlets, or other projecting, intersecting or penetrating objects.

.2 Form joints to conceal shrinkage.

.2 Fastening:

.1 Position items of finished carpentry work accurately, level, plumb, true and fasten or anchor securely.

.2 Design and select fasteners to suit size and nature of components being joined.

.3 Set finishing nails to receive filler. Where screws are used to secure members, countersink screw in round smooth cut hole and plug with wood plug to match material being secured.

.4 Replace items of finish carpentry with damage to wood surfaces including hammer and other bruises.

.3 Standing and running trim:

.1 Butt and cope internal joints of trims to make snug, tight, joint. Cut right angle joints of casing and base with mitred joints.

.2 Install trim in single lengths without splicing.

3.6 Board & Batten
Roof System

.1 See Drawings for details.

3.7 Historic Siding

.1 See Drawings for details.

END

PART 1 - GENERAL

1.1 Summary
of Work

- .1 This Section includes requirements for the roof for supplying labor, materials, tools, and equipment to complete the Work as shown on the Drawings Architectural Division as specified herein including, but not limited to, the following:
 - .1 Air-gap waterproof membrane (DELTA-TRELA)
 - .2 Breathable underlayment membrane (Breathex)

1.2 Related
Sections

- .1 Section 06 08 00 - Carpentry
- .2 Section 07 31 29 - Wood Shingles
- .3 Section 07 62 00 - Sheet Metal Flashing and Trim

1.3 References

- .1 American Architectural Manufacturers Association (AAMA):
 - .1 AAMA 711-13 - Voluntary Specification for Self-Adhering Flashing Used for Installation of Exterior Wall Fenestration Products
 - .2 AAMA 2400-02 - Standard Practice for Installation of Windows with a Mounting Flange in Stud Frame Construction
- .2 American Society for Testing and Materials (ASTM):
 - .1 ASTM D882 - Standard Test Method for Tensile Properties of Thin Plastic Sheeting.
 - .2 ASTM D903 - Standard Test Method for Peel or Stripping Strength of Adhesive Bonds.
 - .3 ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 - .4 ASTM E96 - Standard Test Methods for Water Vapour Transmission of Materials.
 - .5 ASTM E2357 - Standard Test Method for Determining Air Leakage of Air/Vapour Barrier Assemblies.

- .3 National Fire and Protection Agency (NFPA):
 - .1 NFPA 285 - Standard Fire Test Method for Evaluation Of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components.

1.4 Administrative Requirements

- .1 Pre-installation meetings:
 - .1 With prior notice, an Air/Vapour Barrier Manufacturer representative will meet with the necessary parties at the jobsite to review and discuss project conditions as it relates to the integrity of the assembly.

1.5 Submittals

- .1 Provide the following requested information in accordance with Section [project specific] Submittal Procedures.
- .2 Action Submittals:
 - .1 Product Data:
 - .1 Air/Vapour Barrier Manufacturer's guide specification.
 - .2 Air/Vapour Barrier Manufacturer's complete set of technical data sheets for assembly.
 - .3 Air/Vapour Barrier Manufacturer's complete set of guide details for assembly.
 - .2 Certificates:
 - .1 Product certification confirming assembly components are supplied and warranted by a single source Air/Vapour Barrier Manufacturer.
- .3 Warranty:
 - .1 Sample warranty as specified.

1.6 Quality Assurance

- .1 Installer Qualifications:
 - .1 Perform Work in accordance with the Air/Vapour Barrier Manufacturer's published literature and as specified in this section.
 - .2 Maintain one (1) copy of the Air/Vapour Barrier Manufacturer's installation instructions on site.
 - .3 At all times during the execution of the Work allow access to site by the Air/Vapour Barrier Manufacturer representative.
 - .4 If meeting with the Air/vapour barrier Manufacturer during project construction, contact the Air/Vapour Barrier Manufacturer a minimum of two weeks prior to schedule meeting.

1.7 Mock-Ups

- .1 Where directed by Departmental Representative construct typical roof section, 1 meter square, incorporating substrate materials, and flashing, and showing vapour permeable water resistive air/vapour barrier application details.
- .2 Notify Departmental Representative a minimum seven (7) days prior to mock-up construction.
- .3 Review and acceptance of mock-ups does not constitute approval of deviations from the Contract Documents contained in mock-ups unless departmental representative specifically notes such deviations in writing.
- .4 Once reviewed by departmental representative, acceptable mock-up can form a permanent part of the Work, and will form the basis for acceptance for the remainder of the project.
- .5 Remove and replace materials found unacceptable at no additional cost to Owner.

1.8 Delivery, Storage and Handling

- .1 Delivery of Materials:

- .1 Materials shall be delivered to the jobsite in undamaged and clearly marked containers indicating the name of the Air/Vapour Barrier Manufacturer and product.
- .2 Storage of Materials:
 - .1 Store materials as recommended by the air/vapour barrier Manufacturer and conforming to applicable safety regulatory agencies. Refer to all applicable data including, but not limited to, SDS information, Product Data sheets, product labels, and specific instructions for personal protection.
 - .2 Keep solvents away from open flame or excessive heat.
 - .3 Store materials in original packaging.
 - .4 Protect rolls from direct sunlight until ready for use.
 - .5 Refer to Air/Vapour Barrier Manufacturer's published literature.
- .3 Handling:
 - .1 Refer to Air/Vapour Barrier Manufacturer's published literature.

1.9 Site Conditions

- .1 Environmental Requirements:
 - .1 No Work shall be performed during rain or inclement weather.
 - .2 No Work shall be performed on frost covered or wet surfaces.
- .2 Protection:
 - .1 It is the responsibility of the installing Subcontractor to protect all surfaces not included in scope of Work from overspray including, but not limited to, windows, doors, adjacent areas, and vehicles.

- .2 Cap and protect exposed back-up walls against wet weather conditions during and after application of membrane.
- .3 Ensure all preparation Work is completed prior to installing air/vapour barrier.
- .4 All equipment shall be grounded during operations.

1.10 Warranty

- .1 Product Warranty:
 - .1 Manufacturer must warrant the material against product defect for a period of one (1) year from date of purchase.

PART 2 - PRODUCTS

2.1 Manufacturers

- .1 NA

2.2 Materials

- .1 NA

PART 3 - EXECUTION

3.1 Examination

- .1 NA

3.2 Preparation

- .1 NA

3.3 Installation

.1 NA

3.4 Field Quality
Control

.1 NA

3.5 Cleaning

- .1 Promptly as the Work proceeds, and upon completion, clean up and remove from the premises all rubbish and surplus materials resulting from the foregoing Work.
- .2 Clean soiled surfaces, spatters, and damage caused by Work of this Section.
- .3 Check area to ensure cleanliness and remove debris, equipment, and excess material from the site.

END

PART 1 - GENERAL

1.1 Summary of
Work

- .1 This Section specifies water-resistive barriers and accessories, to be installed under the historic siding.

1.2 Related
Sections

- .1 Section 06 08 00 - Carpentry.

1.3 Reference
Standards

- .1 ASTM International (ASTM).
 - .1 ASTM D882-[2010], Standard Test Method for Tensile Properties of Thin Plastic Sheeting.
 - .2 ASTM E84-[2010b], Standard Test Method for Surface Burning Characteristics of Building Materials.
 - .3 ASTM E96/96M-[2010], Standard Test Methods for Water Vapour Transmission of Materials.
 - .4 ASTM E2178-[2003], Standard Test Method for Air Permeance of Building Materials.

1.4 Administrative
Requirements

- .1 Co-ordination: Co-ordinate work of this Section with work of other trades for proper time and sequence to avoid construction delays.
- .2 Pre-installation Meeting: Convene pre-installation meeting after Award of Contract and one week prior to commencing work of this Section to verify project requirements, substrate conditions and coordination with other building sub-trades, and to review manufacturer's written installation instructions.
 - .1 Comply with Section 01 31 19 Project Meetings and co-ordinate with other similar pre installation meetings.

- .2 Notify attendees 2 weeks prior to meeting and ensure meeting attendees include as minimum:
 - .1 Owner;
 - .2 Consultant;
 - .3 Water-resistive barrier installer;
 - .4 Manufacturer's Technical Representative.
- 3. Ensure meeting agenda includes review of methods and procedures related to water-resistive barrier installation including co-ordination with related work.
- 4. Record meeting proceedings including corrective measures and other actions required to ensure successful completion of work and distribute to each attendee within 1 week of meeting.

1.5 Action and Informational Submittals

- .1 Make submittals in accordance with Contract Conditions and Section 01 33 00 Submittal Procedures.
- .2 Product Data: Submit product data including manufacturer's literature for water-resistive barrier membrane and accessories, indicating compliance with specified requirements and material characteristics.
 - .1 Submit list on water-resistive barrier manufacturer's letterhead of materials, components and accessories to be incorporated into Work.
 - .2 MSDS report.
 - .3 Include product names, types and series numbers.
 - .4 Include contact information for manufacturer and their representative for this Project.
- .3 Samples:
 - .1 Submit duplicate 300mm x 300mm inches sample of membrane.
 - .2 Submit duplicate 300mm long samples of seam tape and each type of flashing materials.

- .4 Test Reports:
 - .1 Submit test reports showing compliance with specified performance characteristics and physical properties including air permeance, water vapour permeance and structural performance.
- .5 Field Reports: Submit manufacturer's field reports within 3 days of each manufacturer representative's site visit and inspection.
- .6 Installer Qualifications:
 - .1 Submit letter verifying installer's experience with work similar to work of this Section.

1.6 Closeout Submittals

- .1 Operation and Maintenance Data: Supply maintenance data for water-resistive barrier materials for incorporation into manual specified in Section 01 78 00 Closeout Submittals.
- .2 Record Documentation: In accordance with Section 01 78 00 Closeout Submittals.
 - .1 List materials used in water-resistive barrier work.
 - .2 Warranty: Submit warranty documents specified.

1.7 Quality Assurance

- .1 Installer Quality Assurance: [manufacturer's approval of installer] to be submitted no later than 10 days prior to work commencing to Departmental Representative for acceptance.
- .2 Mock-up: Construct full size 3m x 3m mock-up of wall showing water-resistive barrier using proposed procedures, materials and quality of work where directed by Departmental Representative
 - 1. Include examples of window frame, door frame, interior corner, exterior corner and common protrusions or penetrations of barrier membrane.

2. Purpose: To judge quality of work and material installation.
3. Allow Consultant [24] hours minimum prior to inspection of mock-up.
4. Do not proceed with work prior to receipt of written acceptance of mock-up by Departmental Representative.
5. When accepted, mock-up will demonstrate minimum standard of quality required for work of this Section.
6. Approved mock-up may remain part of finished work.

1.8 Delivery, Storage and Handling

- .1 Delivery and Acceptance Requirements:
 - .1 Deliver material in accordance with Section 01 61 00 Common Product Requirements.
 - .2 Deliver materials and components in manufacture's original packaging with identification labels intact and in sizes to suit project.
- .2 Storage and Handling Requirements: Store materials off ground and protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
 1. Ensure materials are protected from sunlight and UV radiation.
- .3 Packaging Waste Management:
 - .1 Separate and recycle waste packaging materials in accordance with Section 01 74 19 Construction Waste Management and Disposal.
 - .2 Remove waste packaging materials from site and dispose of packaging materials at appropriate recycling facilities.
 - .3 Collect and separate for disposal paper and plastic material in appropriate on-site storage containers for recycling in accordance with Waste Management Plan.

1.9 Warranty

- .1 Project Warranty: Refer to Contract Conditions for project warranty provisions.
- .2 Manufacturer's warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to and not intended to limit other rights Owner may have under Contract Conditions.
 - 1. 10 years limited material warranty.
- .3 Warranty period: 1 years commencing on Date of Substantial Performance of Work.

PART 2 - PRODUCTS

2.1 Manufacturer

- .1 Manufacturer: Cosella-Dörken Products Inc. or approved equal.

2.2 Description

- .1 Vapour permeable water-resistive barrier with highly tear-resistant thermo-bonded non-woven polyester substrate, and waterproof acrylic highly UV resistant coating.

2.3 Design Criteria

- .1 Water Vapour Permeance: To ASTM E96 (Procedure A), 204 perms minimum.
- .2 Water Impact Penetration Resistance: To AATCC 42, no water passing.
- .3 Air Permeance: To ASTM E2178, 0.9 L/(s x m²) @ 75 Pa.
- .4 Tear Resistance: To ASTM D 1922, [1916] [2564] g minimum.
- .5 Dry Tensile Strength: To ASTM D882, MD 47.4 lb/in², CD 28.7 lb/in² minimum.

- .6 Elongation at Break: To ASTM D882, MD 40 %, CD 45 % minimum.
- .7 Fire Rating Characteristics to ASTM E84:
 - .1 Rating: NFPA Class A, IBC Class A minimum.
 - .2 Flame Spread: 10 maximum.
 - .3 Smoke Developed: 145 maximum.

2.4 Materials

- .1 Water-resistive Barrier for Walls: Vapour permeable water-resistive barrier with tear-resistant thermo-bonded, non-woven polyester substrate and waterproof acrylic polymeric coating stabilized against oxidation and UV degradation [and factory applied adhesive edge strips].
 - .1 Service Life Expectancy: > 25 years.
 - .2 Weight: 5.5 lb/100 ft², 270 g/m², 44 lb/roll nominal.
 - .3 Roll Dimensions: 1500mm x 50m.
 - .4 Color: Black
- .2 Acceptable Material: Cosella-Dörken Products Inc., DELTA®-FASSADE S, or approved equal.

2.5 Accessories

- .1 Seam tape: In accordance with water-resistive barrier manufacturer's written recommendations.
 - .1 Acceptable materials: Cosella-Dörken Products Inc., DELTA®-FASSADE TAPE, or approved equal.
- .2 Flashings: Self-adhering, water-resistive flashing membrane [in accordance with water-resistive barrier manufacturer's written recommendations]
 - .1 Acceptable materials: Cosella-Dörken Products Inc., DELTA®-FASSADE FLASHING 225mm wide, or approved equal.
- .3 Fasteners: Water and vapour resistant fasteners in accordance with water-resistive barrier manufacturer's written recommendations.
 - .1 #4 nails with 25mm minimum diameter plastic caps.

- .4 Sealants and Adhesives: Elastomeric sealant and adhesive in accordance with water-resistive barrier manufacturer's written recommendations
 - .1 Ensure sealants are UV resistant and compatible with adjacent materials.
 - .2 Acceptable materials: Cosella-Dörken Products Inc., DELTA®-THAN, or approved equal.
- .5 Primers: In accordance with flashing manufacturer's written recommendations.

2.6 Product Substitutions

- .1 Ensure all accessories such as seam tape, flashing membranes, fasteners and sealants come from same source as water-resistive barrier membrane.
- .2 Substitutions: No substitutions permitted.

PART 3 - EXECUTION

3.1 Installers

- .1 Use only installers with work similar installers for work of this Section.

3.2 Examination

- .1 Verification of Conditions: Verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for water-resistive barrier installation in accordance with manufacturer's written recommendations.
 - .1 Visually inspect substrate in presence of Consultant.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.

3.3 Preparation

- .1 Ensure step flashings and kick-out flashings are installed before beginning installation of water-resistive barrier membrane.
- .2 Ensure protrusions that may penetrate water-resistive barrier membrane are removed before beginning installation.

3.4 Installation

- .1 Install water-resistive barrier before installation of windows and doors in accordance with manufacturer's written recommendations.
- .2 Do installation in accordance with ABAA written recommendations for installation of water-resistive barriers.
- .3 Unroll water-resistive barrier with printed side out, wrapping entire building, including rough openings for windows, doors and other protrusions or penetrations.
 - .1 Install water-resistive barrier plumb and level to exterior face of structural [sheathing board] [insulation board] [exterior gypsum board] or directly to framing members in accordance with manufacturer written recommendations.
 - .2 Ensure water-resistive barrier is installed with textured side facing substrate.
- .4 Start installation of water-resistive barrier at building corner, leaving 150mm to 300mm of membrane extended beyond corner.
- .5 Install horizontally starting at bottom of wall.
 - .1 Overlap water-resistive barrier membrane as follows:
 - .1 Exterior Corners: 300mm minimum.
 - .2 Vertical and horizontal seams: 150mm minimum.
 - .3 Other seams, joints or at protrusions and penetrations: 150mm minimum.

- .6 Sill Plate Interface: Extend lower edge of water-resistive barrier over sill plate interface 75-150 mm.
 - .1 Secure to substrate with elastomeric sealant in accordance with water-resistive barrier manufacturer's written recommendation.

- .7 Attachment of Water-resistive Barrier Membrane to Substrate:
 - .1 Attach water-resistive barrier to wood stud framing through exterior sheathing with mechanical fasteners.
 - .1 Secure using fasteners and custom caps spaced 450mm maximum vertically on center along stud line and 600mm maximum on center, horizontally.
 - .2 Ensure fasteners penetrate wood studs 20 mm minimum.
 - .3 Install fasteners 150 mm from sill and frame of window and door openings.

3.5 Field Quality Control

- .1 Field Inspection: Coordinate field inspection in accordance with Section 01 45 00 Quality Control.

- .2 Site Installation Tolerances:

- .3 Manufacturer's Services:
 - 1. Coordinate manufacturer's services with Section 01 45 00 - Quality Control.
 - .1 Have manufacturer review work involved in handling, installation, protection, and cleaning of water-resistive barrier and components, and submit written reports in acceptable format to verify compliance of Work with Contract conditions.
 - .2 Manufacturer's Field Services: Provide manufacturer's field services consisting of product use recommendations and periodic site visits for product installation review in accordance with manufacturer's instructions.

- .1 Report any inconsistencies from manufacturer's recommendations immediately to Departmental Representative.
- .3 Schedule site visits to review work at stages listed:
 - .1 After delivery and storage of water-resistive barrier and components, and when preparatory work on which Work of this Section depends is complete, but before installation begins.
 - .2 Twice during progress of work at 25% and 60% complete.
 - .3 Upon completion of Work, after cleaning is carried out.
 - .4 Obtain reports within three days of review and submit immediately to Departmental Representative.

3.6 Cleaning

- .1 Progress Cleaning: Perform cleanup as work progresses in accordance with Section 01 74 00 Cleaning and Waste Management.
 - .1 Leave work area clean end of each day.
- .2 Final Cleaning: Upon completion, remove surplus materials, rubbish, tools, and equipment in accordance with Section 01 74 00 - Cleaning and Waste Management.
- .3 Waste Management:
 - .1 Co-ordinate recycling of waste materials with 01 74 19 Construction Waste Management and Disposal.
 - .2 Collect recyclable waste and dispose of or recycle field generated construction waste created during construction or final cleaning related to work of this Section.
 - .3 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.7 Protection

- .1 Protect installed products and components from damage during construction.

- .2 Repair damage to adjacent materials caused by water-resistive barrier installation.

END

PART 1 - GENERAL

1.1 Related Work

- .1 Carpentry: Section 06 08 00.
- .2 Sheet Metal Flashing & Trim: Section 07 62 00.

1.2 References

- .1 CSA Bill-R2003 Wire nails, Spikes and Staples.
- .2 CAN/CGSB-51.32-M77 Sheathing, Membrane, Breather Type.
- .3 National Building Code of Canada (NBC) 2010.

1.3 Storage & Handling

- .1 Provide and maintain dry, off-ground weatherproof storage.
- .2 Remove only in quantities required for same day use.

1.4 Unused Materials

- .1 All unused shingles and shakes remain property of Owner.

PART 2 - PRODUCTS

2.1 Materials

- .1 Pine and oak shingles: Knot free 450 mm length, 140 mm (5 5/8") width, Native Eastern Cedar, Grade A, 11 mm (7/16") butt. Size to replicate existing shingle. Confirm on site.

- .2 Nails: Stainless 316. Length to suit.
- .3 Sealants: by Section 07 92 00.

PART 3 - EXECUTION

3.1 Installation

- .1 Install one layer of air barrier horizontally by stapling, lapping edges 150 mm (6").
- .2 Install sill flashings, wood starter strips, internal and external corners, edgings and flashings over openings. Apply corner and header boards in maximum practicable lengths, bevel cut joints and seal.
- .3 Install wood shingles in general accordance with MBC 2010 using double starter course at base. Space 3 mm (1/8") apart, stagger joints 38 mm (1-1/2") minimum in successive courses ensuring that no joints are in alignment in any 3 courses. Use 2 nails per shingle, space 19 mm (3/4") from edges and set 38 mm (1-1/2") above butt line of following course. Drive flush but do not crush shingle face. Weather exposure 150 mm (6") maximum to match existing. Confirm on site.

END

PART 1 - GENERAL

1.1 Section Includes

- .1 Lead flashing at openings for roof and gable end flashings.

1.2 Related Sections

- .1 Section 07 31 29 - Wood Shingles.
- .2 Section 07 92 00 - Joint Sealants.

1.3 References

- .1 American Society for Testing and Materials (ASTM International).
 - .1 ASTM A653/A653M-01a, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

1.4 Submittals

- .1 Section 01 33 00 - Submittal procedures.
- .2 Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.
- .3 Submit two samples 50 x 50 mm in size illustrating metal finish colour.

1.5 Qualifications

- .1 Fabricator and Installer: Company specializing in sheet metal flashing work.

1.6 Delivery, Storage
and Handling

- .1 Stack preformed and prefinished material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
- .2 Prevent contact with materials which may cause discolouration or staining.

PART 2 - PRODUCTS

2.1 Sheet Materials

- .1 48 oz sheet Lead Flashing.

2.2 Accessories

- .1 Fasteners: Finish exposed fasteners same as flashing metal. Permitted only on approval of Departmental Representative.
- .2 Bedding Sealant: Butyl, as specified in Section 07 92 00 - Joint Sealants.

2.3 Fabrication

- .1 Form sections true to shape, accurate in size, square, and free from distortion or defects.
- .2 Fabricate cleats of same material as sheet, minimum 50 mm wide, interlockable with sheet.
- .3 Form pieces in longest possible lengths.
- .4 Hem exposed edges on underside 13 mm; mitre and seam corners.
- .5 Form material with flat lock seams.
- .6 Fabricate vertical faces with bottom edge formed outward 6 mm and hemmed to form drip.

- .7 Fabricate flashings to profiles indicated. Coordinate installation with work of other sections.

PART 3 - EXECUTION

3.1 Preparation

- .1 Install starter and edge strips, and cleats before starting installation.

3.2 Installation

- .1 Secure flashings in place using concealed fasteners. Use exposed fasteners only where permitted.
- .2 Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- .3 Seal metal joints watertight.

END

PART 1 - GENERAL

1.1 Section Includes

- .1 Preparing substrate surfaces.
- .2 Sealant and joint backing.

1.2 Related Sections

- .1 Section 07 31 29 - Wood Shingles
- .2 Section 07 62 00 - Sheet Metal Flashing and Trim.

1.3 References

- .1 American Society for Testing and Materials (ASTM).
 - .1 ASTM C834-00e1, Standard Specification for Latex Sealants.
 - .2 ASTM C919-02, Standard Practice for Use of Sealants in Acoustical Applications.
 - .3 ASTM C920-02, Standard Specification for Elastomeric Joint Sealants.
 - .4 ASTM D2369-04, Standard Test Method for Volatile Content of Coatings.
 - .5 ASTM D5893-96, Standard Specification for Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements.
- .2 United States Environmental Protection Agency (USEPA)
 - .1 Reference Test Method 24 - Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings.
- .3 American Society for Testing and Materials (ASTM)
 - .1 ASTM D2369-04, Standard Test Method for Volatile Content of Coatings.

1.4 Submittals for Review

- .1 Submit in accordance with Sections 01 33 00 - Submittal Procedures.
- .2 Product Data: Provide data indicating sealant chemical characteristics, performance criteria, substrate preparation, limitations, and colour availability.
- .3 Samples: Submit two sample ribbons of sealant, illustrating sealant colours for selection.
- .4 Submit laboratory tests or data validating product compliance with performance criteria specified. Include SWRI validation certificate where required.
- .5 Closeout Submittals: Sealant applicator to submit copies of the Manufacturer's Warranty.

1.5 Submittals for Information

- .1 Submit in accordance with Sections 01 33 00 - Submittal Procedures.
- .2 Manufacturer's Installation Instructions: Indicate special procedures, surface preparation, perimeter conditions requiring special attention, and field quality control testing.

1.6 Quality Assurance

- .1 Installer Qualifications: Qualified to perform work specified by reason of experience or training provided by product manufacturer. Submit proof of experience to the Departmental Representative prior to 10 days before work commences for acceptance.
- .2 Adhesion Pull Tests: the number of adhesion pull tests to be determined by manufacturer's weather seal warranty. Adhesion pull tests to be conducted by or in the presence of manufacturer's representative. Manufacturer to supply Departmental Representative with results of adhesion pull tests. Sealant installer

Responsible for repairing areas where adhesion pull tests are conducted, without change to the Contract price.

- .3 Manufacturer's Representative: Coordinate with manufacturer's representative to provide access to completed work areas until adhesion pull tests can be completed.

1.7 Delivery, Storage and Handling

- .1 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture, water and contact with ground or floor.
- .2 Store products in a location protected from freezing, damage, construction activity, precipitation, and direct sunlight in strict accordance with manufacturer's recommendations.
- .3 Condition products to approximately 16 to 21°C for use in accordance with manufacturer's recommendations.

1.8 Environmental and Safety Requirements

- .1 VOC Limitations: for all materials supplied by this Section, the total VOC content will be less than or equal to 250 g/L, less water, when tested to ASTM D2369.
- .2 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of material safety data sheets acceptable to Labour Canada.
- .3 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

- .4 Dispose used sealants and cartridges in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

1.9 Warranty

- .1 Provide manufacturer's twenty year material warranty for installed silicone sealant.

PART 2 - PRODUCTS

2.1 Sealant Materials

- .1 VOC Limit - Typical for all sealants: < 250 g/l (2.08 lb/gal) when tested in accordance with USEPA Method 24 and ASTM D2369.
- .2 Acoustical sealant: to ASTM C919, single component, non-hardening, non-skinning, synthetic rubber. Acceptable product: Tremco Acoustical Sealant, Pecora BA-98
- .3 Acrylic latex: to ASTM C 834, single component general purpose siliconized acrylic latex sealant. Acceptable product: BASF Sonolastic Sonolac, GE L100, Tremco Tremflex 834, Pecora AC-20 + silicone
- .4 Butyl Sealant: to ASTM C1311, single component, solvent release, non-skinning, nonsagging, black colour; Acceptable Products: Tremco Butyl Sealant, Pecora BA-98
- .5 Epoxy, flexible: Poured flexible 100% solids epoxy joint filler. Acceptable product: BASF Epolith-P, Sika Loadflex 2, Masterseal CR190
- .6 Polyurethane Sealant, below grade compatible: Two-component, non-sag to ASTM C920, Type M, Grade NS, Class 25; with $\pm 25\%$ movement capability for vertical joints. Acceptable products: Sika Sikaflex 2C/NS, Pecora Dynatrol II

- .7 Polyurethane, self-levelling: to ASTM C 920, Type S, Grade P, Class 25, single component self-levelling polyurethane sealant with plus or minus 25 percent movement capability for horizontal joints. Acceptable product: BASF Sonolastic SL1, Tremco Vulkem 45, Sika Sikaflex 1C SL.
- .8 Silicone, one part: to ASTM C 920, Type S, Grade NS, Class 25, single component neutral cure silicone sealant, plus minus 50% joint movement capability. Acceptable product: Dow Corning 795, Tremco Spectrum 2, BASF Omniseal 50, Pecora 895NST
- .9 Silicone, mildew resistant: to ASTM C 920, single component mildew resistant silicone sealant, +/- 25% movement capability. Acceptable product: Tremco Tremsil 200, Dow Corning 786, BASF Omniplus.

2.2 Accessories

- .1 Primer: Type recommended by the sealant manufacturer and compatible with joint forming materials.
- .2 Joint Cleaner: Non-corrosive and non-staining type recommended by sealant manufacturer and compatible with joint forming materials.
- .3 Soft Backer Rod: to ASTM C 1330, non-gassing, reticulated closed-cell polyethylene rod designed for use with cold-applied joint sealants. Size required for joint design.
- .4 Closed-Cell Backer Rod: to ASTM C 1330, closed-cell polyethylene rod designed for use with cold-applied joint sealants for on-grade or below-grade applications. Size required for joint design.
- .5 Joint Filler: closed-cell polyethylene joint filler designed for use in cold joints, construction joints, or isolation joints wider than 6 mm. Size required for joint design.
- .6 Bond Breaker: Pressure-sensitive tape recommended by sealant manufacturer to suit application.

2.3 Colours

2.4 Sealant Schedule

- .1 Unless indicated otherwise in respective technical specification sections, colour selection is at the option of the Departmental Representative.
- .1 Perimeters of exterior openings where frames meet exterior facade of building. All other exterior applications.
 - .1 Sealant type: Silicone, one part.
- .2 Perimeters of interior door/window frames and surfaces, where required.
 - .1 Sealant type: Acrylic latex.
- .3 Perimeter of washroom fixtures, countertop backsplash at wall.
 - .1 Sealant type: Silicone, mildew resistant.
- .4 Building envelope applications (vapour barrier/vapour barrier, vapour barrier/wall opening, etc):
 - .1 Sealant type: Acoustical sealant.
- .5 Interior partitions and acoustic applications:
 - .1 Sealant type: Acoustical sealant.
- .6 Brick veneer control joints.
 - .1 Sealant type: Silicone, one part.
- .7 Interior concrete control joints and sawcuts.
 - .1 Sealant type: Epoxy, flexible.
- .8 Perimeter of interior concrete slab.
 - .1 Sealant type: Polyurethane, self-levelling.
- .9 For locations not included in this schedule, consult with Departmental Representative for proper selection of sealants.

PART 3 - EXECUTION

3.1 Examination

- .1 Verify that substrate surfaces and joint openings are clean, dry, and free of frost and ready to receive work.
- .2 Verify that joint backing and release tapes are compatible with sealant.

3.2 Preparation

- .1 Remove loose materials and foreign matter which might impair adhesion of sealant.
- .2 Clean and prime joints in accordance with sealant manufacturer's written instructions.
- .3 Perform preparation in accordance with sealant manufacturer's written instructions.
- .4 Protect elements surrounding the work of this section from damage or disfiguration.

3.3 Installation

- .1 Install sealant in accordance with sealant manufacturer's written instructions.
- .2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
- .3 Measure joint dimensions and size materials to achieve required 2:1 width/depth ratios.
- .4 Install joint backing to achieve a neck dimension no greater than 1/3 of the joint width.
- .5 Install bond breaker where joint backing is not used.
- .6 Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

-
- .7 Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
 - .8 Tool joints concave.

3.4 Field Quality Control

- .1 Joint Sealants: Perform adhesion tests in accordance with manufacturer's written instructions.
- .2 Perform test 21 days after installation at a rate of one test every 300 m of installed sealant.
- .3 Remove sealants failing adhesion test, clean substrates, reinstall sealants and perform retesting.
- .4 Maintain test log and submit report to Departmental Representative indicating tests, locations, dates, results, and remedial actions.

3.5 Cleaning

- .1 Clean adjacent soiled surfaces.

3.6 Protection of Finished Work

- .1 Remove masking tape and excess sealant.
- .2 Protect sealants until cured.

END

PART 1 - GENERAL

1.1 General
Requirements

- .1 The Work under this section shall include the supply of labour, supervision, materials, equipment, and transportation necessary to complete excavation and backfill as shown on the Contract Drawings, per the Specifications, and as directed by the Departmental Representative, complete in every respect.
- .2 Generally, the Work includes but is not necessarily limited to the following:
 - .1 Foundation excavations.
 - .2 Dewatering.
 - .3 Backfilling of select materials.
 - .4 Compacting fill materials.
 - .5 Removal from site all excavated materials except for material required for backfilling and grading.

1.2 Measurement
Procedures

- .1 Work performed under this Section will be incidental to Work in other Sections.

1.3 References

- .1 Nova Scotia Department of Transportation and Infrastructure Renewal Standard Specifications (most recent version):
 - .1 NSTIR Standard Specification Division 2 Earthwork.
- .2 Excavation limit as shown on the Plans.

1.4 Definitions

- .1 Excavation class: one class of excavation will be recognized; common excavation.
 - .1 Common excavation: excavation of materials of whatever nature, which are not included under definitions of rock excavation.
- .2 Waste material: excavated material unsuitable for use in Work or surplus to requirements.

- .3 Borrow material: material obtained from locations outside area to be graded, and required for construction of fill areas or for other portions of Work.
- .4 Unsuitable materials:
 - .1 Weak, chemically unstable, and compressible materials.
 - .2 Frost susceptible materials:
 - .1 Fine grained soils with plasticity index less than 10 when tested to ASTM D4318, and gradation within limits specified when tested to ASTM D422 and ASTM C136: Sieve sizes to CAN/CGSB-8.1 CAN/CGSB-8.2.
 - .2 Table:

Sieve Designation	% Passing
2.00 mm	100
0.10 mm	45 - 100
0.02 mm	10 - 80
0.005 mm	0 - 45
 - .3 Coarse grained soils containing more than 20 % by mass passing 0.075 mm sieve.

1.5 Action and
Informational
Submittals

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Quality Control: in accordance with Section 01 45 00 - Testing and Quality Control:
 - .1 Submit to Departmental Representative written notice at least 7 days prior to excavation work, to ensure cross sections are taken.
 - .2 Submit to Departmental Representative written notice when bottom of excavation is reached.
- .3 Preconstruction Submittals:
 - .1 Submit construction equipment list for major equipment to be used in this section prior to start of Work.
 - .2 Submit records of underground utility locates, indicating: clearance record from utility authority.

- .4 Samples:
 - .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Inform Departmental Representative at least 2 weeks prior to beginning Work, of proposed source of fill materials and provide access for sampling.
 - .3 Submit 70 kg samples of type of fill specified including representative samples of excavated material.
 - .4 Ship samples prepaid to Departmental Representative, in tightly closed containers to prevent contamination and exposure to elements.

1.6 Quality Assurance

- .1 Health and Safety Requirements:
 - .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

1.7 Waste Management And Disposal

- .1 Separate waste materials for reuse in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Divert excess materials from landfill to local facility for reuse as directed by Departmental Representative.

1.8 Existing Conditions

- .1 Buried services:
 - .1 Before commencing work establish location of buried services on and adjacent to site.
 - .2 Arrange with appropriate authority for relocation of buried services that interfere with execution of work: pay costs of relocating services.
 - .3 Remove obsolete buried services within 2 m of foundations: cap cut-offs.
 - .4 Size, depth and location of existing utilities and structures as indicated are for guidance only. Completeness and accuracy are not guaranteed.

- .5 Prior to beginning excavation Work, notify applicable Departmental Representative and authorities having jurisdiction establish location and state of use of buried utilities and structures. Departmental Representative to clearly mark such locations to prevent disturbance during Work.
- .6 Confirm locations of buried utilities by careful test excavations.
- .7 Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered as indicated.
- .8 Where utility lines or structures exist in area of excavation, obtain direction of Departmental Representative before removing or re-routing. Costs for such Work to be paid by Departmental Representative.
- .9 Record location of maintained, re-routed and abandoned underground lines.
- .10 Confirm locations of recent excavations adjacent to area of excavation.
- .3 Existing buildings and surface features:
 - .1 Conduct, with Departmental Representative, condition survey of existing buildings, trees and other plants, lawns, fencing, service poles, wires, rail tracks, pavement, survey bench marks and monuments which may be affected by Work.
 - .2 Protect existing buildings and surface features from damage while Work is in progress. In event of damage, immediately make repair as directed by Departmental Representative.
 - .3 Where required for excavation, cut roots or branches as directed by Departmental Representative.

1.9 Archeological Definitions

- .1 Archeological Site. While most of the sites will be subsurface or submerged; this is not a universal or necessary condition because a built heritage site and an archeological site exist in a continuum, and the inclusion of a given site in

one category, or the other, may be somewhat arbitrary. For the purpose of this document, an archeological site is a surface vestige, or the subsurface, or submerged remains of human activity at which an understanding of these activities and the management of these resources can be achieved through the employment of archeological techniques.

- .2 Archeological Artifact: An object, a component of an object, a fragment, or shred of an object that was for or used by humans; a soil, botanical or other sample of archeological investigation of a site.
- .3 Archeological Records: Notes, drawings, photographs, plans, computer databases, reports and any other audio-visual records related to the archeological investigation of a site.
- .4 Archeological Collection: Archeological artifacts and associated archeological records.
- .5 Archeological Resource: An archeological site and its associated archeological collection.
- .6 All surface modifications are restricted to the identified corridors. Construction corridors to be accurately located by field survey by the Contractor prior to commencement of work operations.

1.10 Protection of Existing Features

- .1 Existing buried utilities, services and structures:
 - .1 Size, depth and location of existing utilities, services and structures as indicated are for guidance only. Completeness and accuracy are not guaranteed.
 - .2 Prior to commencing any excavation work, notify applicable owner or authorities having jurisdiction, establish location and state of use of buried utilities, services and structures. Clearly mark such

- locations to prevent disturbance during work.
- .3 Confirm locations of buried utilities and services by careful test excavations.
 - .4 Maintain and protect from damage, water, sewer, electric, telephone and storm sewers, communications and other utilities, services and structures encountered as indicated. Obtain direction of Departmental Representative before moving or otherwise disturbing utilities, services or structures.
 - .5 Submit plans and details to show how existing utilities and services are to be maintained and protected while completing trench excavations and installing new services and utilities in the immediate area.
 - .6 Record location of maintained, re-routed and abandoned underground utilities and services.
 - .7 Repair all services, utilities and structures damaged during construction to the satisfaction of the Departmental Representative using new materials equivalent in manufacture, class, size and shape to the existing. The cost of all repair work shall be borne by the Contractor.
- .2 Existing buildings and surface features:
- .1 Conduct, with Departmental Representative, condition survey of existing buildings, lawns, sea wall, service poles, wires, pavement, survey bench marks and monuments which may be affected.
 - .2 Protect existing buildings and surface features which may be affected by work from damage while work is in progress. In the event of damage, immediately make repair to approval of Departmental Representative.
 - .3 Where excavation necessitates root or branch cutting, do so only as approved by Departmental Representative.
 - .4 All surface modifications are restricted to the identified corridors. Construction corridors to be accurately located by field

- survey by the Contractor prior to commencement of work operations.
- .5 All vehicle traffic is restricted to existing roadways or as indicated in project plans. Any deviation from the identified corridor requires Archeological review. A field visit will be scheduled with Contractor for locational confirmation and all areas of proposed construction will be marked in the field with orange flagging tape prior to commencement of work.
 - .6 The locational data for all encountered services and utilities that are to remain in service and all newly installed utilities and services will be provided in northing and easting (eg. N 5088673.329, E 734175.481) referenced to UTM Zone 20, vertical datum CGVD28, to an accuracy of ± 2 cm. This locational information is to be provided on disk in a DWG and DXF format which is compatible with SPANS EXPLORER.
 - .7 Port Royal protects a large and complex archeological site. These archeological resources will be respected and maintained in accordance with Parks Canada Cultural Resources Guidelines.

PART 2 PRODUCTS

2.1 Materials

- .1 Clear stone: to NSTIR Division 3, Section 4 - Clear Stone C5
 - .1 Aggregates shall be composed of clean, hard, sound, durable, uncoated particles that do not contain friable, soluble or reactive minerals or other deleterious materials or conditions that would make the aggregate prone to decomposition or disintegration when exposed to the natural elements after placement in the work.
 - .2 Gradations to be within limits specified when tested to ASTM C136 and ASTM C117. Sieve sizes to CAN/CGSB-8.1.
 - .3 Maximum Micro-Deval loss of 25% when tested to DOT & PW TM-1.

- .4 Maximum freeze-thaw loss of 20% when tested to MTO LS 614.
- .5 Plasticity Index to zero (0) when tested to ASTM D4318.
- .6 Absorption to maximum 1.75% when tested to ASTM C127
- .7 Table:

Sieve Designation	% Passing
28 mm	100
20 mm	90 - 100
10 mm	0 - 40
5 mm	0 - 10

- .2 Backfill soils: to NSTIR Division 3, Section 10 - Fill Against Structure
 - .1 Aggregates shall be composed of clean, hard, sound, durable, uncoated particles that do not contain friable, soluble or reactive minerals or other deleterious materials or conditions that would make the aggregate prone to decomposition or disintegration when exposed to the natural elements after placement in the work.
 - .2 Gradations to be within limits specified in Table 3.10.2 for 'Fill Against Concrete Structures' when tested to ASTM C136 and ASTM C117. Sieve sizes to CAN/CGSB-8.1.
 - .3 Maximum LA Abrasion (Grading A) of 45 when tested to ASTM C131.
 - .4 Maximum Plasticity Index (sand portion) of 6 when tested to ASTM D4318.
 - .5 Table:

Sieve Designation	% Passing
	Table 3.10.2
80 000 µm	100
56 000 µm	70 - 100
28 000 µm	50 - 80
14 000 µm	35 - 65
5 000 µm	20 - 50
160 µm	5 - 12
80 µm	3 - 5

PART 3 EXECUTION

3.1 Site Preparation

- .1 Remove obstructions from surfaces to be excavated within limits indicated.

3.2 Preparation/
Protection

- .1 Protect existing features in accordance with Section 01 56 00 - Temporary Barriers and Enclosures and applicable local regulations.
- .2 Keep excavations clean, free of standing water, and loose soil.
- .3 Protect natural and man-made features required to remain undisturbed. Unless otherwise indicated or located in an area to be occupied by new construction, protect existing trees from damage.
- .4 Protect buried services that are required to remain undisturbed.

3.3 Stockpiling

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

3.4 Cofferdams, Shoring,
Bracing and Underpinning

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

- .2 Obtain permit from authority having jurisdiction for temporary diversion of water course.
- .3 Construct temporary Works to depths, heights and locations as directed by Departmental Representative.
- .4 During backfill operation:
 - .1 Unless otherwise indicated or directed by Departmental Representative, remove sheeting and shoring from excavations.
 - .2 Do not remove bracing until backfilling has reached respective levels of such bracing.
 - .3 Pull sheeting in increments that will ensure compacted backfill is maintained at elevation at least 500 mm above toe of sheeting.
- .5 When sheeting is required to remain in place, cut off tops at elevations as indicated.
- .6 Upon completion of substructure construction:
 - .1 Remove cofferdams, shoring and bracing.
 - .2 Remove excess materials from site and restore watercourses as directed by Departmental Representative.

3.5 Dewatering and Heave Prevention

- .1 Keep excavations free of water while Work is in progress.
- .2 Provide for Departmental Representative's review and approval details of proposed dewatering or heave prevention methods, including dikes, well points, and sheet pile cutoffs.
- .3 Avoid excavation below groundwater table if quick condition or heave is likely to occur.
 - .1 Prevent piping or bottom heave of excavations by groundwater lowering, sheet pile cut-offs, or other means.
- .4 Protect open excavations against flooding and damage due to surface run-off.

- .5 Dispose of water in accordance with Section 01 35 43 - Environmental Procedures and in a manner not detrimental to public and private property, or portion of Work completed or under construction.
 - .1 Provide and maintain temporary drainage ditches and other diversions outside of excavation limits.
- .6 Provide flocculation tanks, settling basins, or other treatment facilities to remove suspended solids or other materials before discharging to storm sewers, watercourses or drainage areas.

3.6 Excavation

- .1 Advise Departmental Representative at least 7 days in advance of excavation operations for initial cross sections to be taken.
- .2 Excavate to lines, grades, elevations and dimensions as directed by Departmental Representative.
- .3 Remove obstructions encountered during excavation in accordance with Section 02 41 13 - Selective Site Demolition.
- .4 Excavation will not interfere with bearing capacity of adjacent foundations.
- .5 Do not disturb soil within branch spread of trees or shrubs that are to remain.
 - .1 If excavating through roots, excavate by hand and cut roots with sharp axe or saw.
- .6 Keep excavated and stockpiled materials safe distance away from edge of excavation as directed by Departmental Representative.
- .7 Restrict vehicle operations directly adjacent to open excavations.
- .8 Dispose of surplus and unsuitable excavated material as directed by the Departmental Representative.
- .9 Do not obstruct flow of surface drainage or natural watercourses.

- .10 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.
- .11 Notify Departmental Representative when bottom of excavation is reached.
- .12 Obtain Departmental Representative approval of completed excavation.
- .14 Remove unsuitable material from trench bottom including those that extend below required elevations to extent and depth as directed by Departmental Representative.
- .15 Correct unauthorized over-excavation as follows:
 - .1 Fill under areas with Gravel Borrow (NSTIR Standard Specification Division 3 - Granular Materials, Section 1 - Gravel Borrow compacted to not less than 95 % of corrected Standard Proctor maximum dry density.
- .16 Hand trim, make firm and remove loose material and debris from excavations.
 - .1 Where material at bottom of excavation is disturbed, compact foundation soil to density at least equal to undisturbed soil.

3.7 Backfilling

- .1 Do not proceed with backfilling operations until completion of following:
 - .1 Departmental Representative has inspected and approved installations and construction below finished grade.
 - .2 Inspection, testing, approval and recording location of underground utilities.
 - .3 Removal of shoring and bracing; backfilling of voids with satisfactory soil material.
- .2 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.
- .3 Do not use backfill material which is frozen or contains ice, snow or debris.

- .4 Place backfill material in uniform layers not exceeding 300 mm compacted thickness up to grades indicated. Compact each layer before placing succeeding layer.
- .5 Backfilling around installations:
 - .1 Place bedding and surround material as specified elsewhere.
 - .2 Place layers simultaneously on both sides of installed Work to equalize loading. Difference not to exceed 300mm.

3.8 Restoration

- .1 Upon completion of Work, remove waste materials and debris in accordance to Section 01 74 21 - Construction/Demolition Waste Management and Disposal, trim slopes, and correct defects as directed by Departmental Representative.
- .2 Replace topsoil as directed by Departmental Representative.
- .3 Reinstate lawns to elevation which existed before excavation.
- .4 Clean and reinstate areas affected by Work as directed by Departmental Representative.
- .5 Protect newly graded areas from traffic and erosion and maintain free of trash or debris.

END

PART 1 GENERAL

1.1 Related Requirements

- .1 Section 32 92 23 - Sodding

1.2 References

- .1 Agriculture and Agri-Food Canada
 - .1 The Canadian System of Soil Classification, Third Edition, 1998.
- .2 Canadian Council of Ministers of the Environment
PN1340-2005, Guidelines for Compost Quality.
- .3 U.S. Environmental Protection Agency (EPA)/Office of Water
 - .1 EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.
- .4 Nova Scotia Department of Transportation and Infrastructure Renewal Standard Specification (most recent version):
 - .1 NSTIR Standard Specification - Division 7 - Environmental Protection, Section 8 - Topsoil.

1.3 Definitions

- .1 Compost:
 - .1 Mixture of soil and decomposing organic matter used as fertilizer, mulch, or soil conditioner.
 - .2 Compost is processed organic matter containing 40% or more organic matter as determined by Walkley-Black or Loss On Ignition (LOI) test.
 - .3 Product will be sufficiently decomposed (i.e. stable) so that any further decomposition does not adversely affect plant growth (C:N ratio below 25, and contain no toxic or growth inhibiting contaminants).
 - .4 Composed bio-solids to: CCME Guidelines for Compost Quality, Category (A) (B).

1.4 Submittals

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

1.5 Quality Assurance

- .1 Perform Work in accordance with the projects Erosion and Sedimentation Control Plan as specified in Section 01 35 43 - Environmental Procedures.
- .2 Pre-installation meetings: conduct pre-installation meeting to verify project requirements, installation instructions and warranty requirements in accordance with Division 1.

1.6 Waste Management and Disposal

- .1 Separate waste materials for reuse and recycling in accordance with Division 1.
- .2 Divert unused soil amendments from landfill to official hazardous material collections site approved by Departmental Representative.
- .3 Do not dispose of unused soil amendments into sewer systems, into lakes, streams, onto ground or in locations where it will pose health or environmental hazard.

PART 2 PRODUCTS

2.1 Topsoil

- .1 Existing Topsoil: if available, to be used on all areas in amended form, salvaged topsoil to meet following criteria:
 - .1 50% sand maximum and 3 to 10% organic content.
 - .2 Fertility: major soil nutrients present in following ratios:
 - .1 Nitrogen (N): 20 to 40 micrograms of available N per gram of topsoil.
 - .2 Natural Phosphorus (P): 10 to 20 micrograms of phosphate per gram of topsoil.
 - .3 Potassium (K): 80 to 120 micrograms of potash per gram of topsoil.
 - .4 Calcium, magnesium, sulfur and micro-nutrients present in balanced ratios to support germination and/or establishment of intended vegetation.
 - .3 pH value: 6.0 - 7.5
 - .4 Contain no toxic elements or growth inhibiting materials.
 - .5 Free from:
 - .1 Debris and stones over 10 mm diameter.
 - .2 Coarse vegetative material, 10 mm diameter and 100 mm length, occupying more than 2% of soil volume.
 - .6 Consistence: friable when moist.
 - .7 Double screen salvaged topsoil to remove all stones over 10 mm diameter.

2.2 Soil Amendments

- .1 Fertilizer:
 - .1 Fertility: major soil nutrients present in following amounts:
 - .2 Nitrogen (N): 20 to 40 micrograms of available N per gram of topsoil.
 - .3 Natural Phosphate products (P): 40 to 50 micrograms of phosphate per gram of topsoil.
 - .4 Potassium (K): 75 to 110 micrograms of potassium per gram of topsoil.

- .5 Calcium, magnesium, sulfur and micro-nutrients present in balanced ratios to support germination and/or establishment of intended vegetation.
- .6 pH value: 5.5 to 7.5.
- .2 Peatmoss:
 - .1 Derived from partially decomposed species of Sphagnum Mosses.
 - .2 Elastic and homogeneous, brown in colour.
 - .3 Free of wood and deleterious material which could prohibit growth.
 - .4 Shredded particle minimum size: 5 mm.
- .3 Sand: washed coarse silica sand, medium to coarse textured.
- .4 Organic matter: compost Category A, B in accordance with CCME PN1340, unprocessed organic matter, such as rotted manure, hay, straw, bark residue or sawdust, meeting the organic matter, stability and contaminant requirements.
- .5 Limestone:
 - .1 Ground agricultural limestone.
 - .2 Gradation requirements: percentage passing by weight, 90% passing 1.0 mm sieve, 50% passing 0.125 mm sieve.
- .6 Fertilizer: industry accepted "phosphate free" standard medium containing nitrogen, phosphorous, potassium and other micro-nutrients suitable to specific plant species or application or defined by soil test.

2.3 Source Quality Control

- .1 Advise Departmental Representative of sources of topsoil and manufactured topsoil to be utilized with sufficient lead time for testing.
- .2 Contractor is responsible for amendments to existing topsoil and to supply topsoil as specified.

- .3 Soil testing by recognized testing facility for pH, P and K, and organic matter. Soil test to identify amendments necessary to meet requirements for topsoil as specified.
- .4 Testing of topsoil will be carried out by testing laboratory designated by Departmental Representative.
 - .1 Soil sampling, testing and analysis to be in accordance with Provincial standards.

PART 3 EXECUTION

3.1 Placing and Spreading of Topsoil/ Planting Soil

- .1 Place topsoil after Departmental Representative has accepted subgrade.
- .2 Spread topsoil in uniform layers not exceeding 150 mm.
- .3 For sodded areas keep topsoil 15 mm below finished grade.
- .4 Spread topsoil as indicated to following minimum depths after compaction to 85% Modified Proctor Density.
200 mm for sodded areas.
- .5 Manually spread topsoil/planting soil around trees, shrubs and obstacles.

3.2 Soil Amendments

- .1 Apply soil amendments with rules as specified and as determined by soil sample test.

3.3 Finish Grading

- .1 Grade to eliminate rough spots and low areas and ensure positive drainage.
 - .1 Prepare loose friable bed by means of cultivation and subsequent raking.

-
- .2 Consolidate topsoil to required bulk density using equipment approved by Departmental Representative.
 - .1 Leave surfaces smooth, uniform and firm against deep foot printing.

3.4 Acceptance

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

3.5 Surplus Material

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

3.6 Cleaning

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

END

PART 1 GENERAL

1.1 Related Requirements

- .1 Section 31 23 33 - Excavating, Trenching and Backfilling

1.2 Payment Procedures

- .1 Testing of topsoil: Departmental Representative will pay for cost of tests.

1.3 References

- .1 Nova Scotia Department of Transportation and Infrastructure Renewal Standard Specification (most recent version):
 - .1 NSTIR Standard Specification - Division 7 - Environmental Protection, Section 8 - Topsoil.

1.4 Administrative Requirements

- .1 Scheduling:
 - .1 Schedule sod laying to coincide with preparation of soil surface.
 - .2 Schedule sod installation when frost is not present in ground.
 - .3 Pre-Installation Meetings: conduct pre-installation meeting to verify project requirements, installation instructions and warranty requirements in accordance with Section [01 31 19 - Project Meetings].

1.5 Submittals

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for sod, geotextile and fertilizer and include product characteristics, performance criteria, physical size, finish and limitations.

- .2 Submit [2] copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .3 Samples.
 - .1 Submit:
 - .1 Sod for each type specified.
 - .1 Install approved samples in one square metre mock-ups and maintain in accordance with maintenance requirements during establishment period.
 - .2 Bio-degradable geotextile fabric.
 - .3 0.5 kg container of fertilizer.
 - .2 Obtain approval of samples by Departmental Representative.
- .4 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements of seed mix, seed purity, and sod quality.
- .5 Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties of seed mix, seed purity, and sod quality.

1.6 Quality Assurance

- .1 Perform Work in accordance with the project Erosion and Sedimentation Control Plan as specified in Section 01 35 43 - Environmental Procedures.

1.7 Delivery, Storage and Handling

- .1 Deliver, store, and handle materials in accordance with Section 01 61 00 Common Product Requirements and with manufacturer's written instructions.

- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

1.8 Waste Management and Disposal

- .1 Separate waste materials for reuse and recycling in accordance with Division 1.
- .2 Divert unused soil amendments from landfill to official hazardous material collections site approved by Departmental Representative.
- .3 Do not dispose of unused soil amendments into sewer systems, into lakes, streams, onto ground or in locations where it will pose health or environmental hazard.

PART 2 PRODUCTS

2.1 Materials

- .1 Commercial Grade Turf Grass Nursery:
 - .1 Mow sod at height directed by Departmental Representative within 36 hours prior to lifting, and remove clippings.
 - .2 Not more than 5 broadleaf weeds and up to 20% native grasses per 40 square metres.
- .2 Sod establishment support:
 - .1 Geotextile fabric: biodegradable, square mesh.
 - .2 Wooden pegs: [17 x 8 x 200] mm.
 - .3 Biodegradable starch pegs: [17 x 8 x 200] mm
- .3 Water:
 - .1 Supplied by Departmental Representative at designated source.
- .4 Fertilizer:
 - .1 To Canada "Fertilizers Act" and Fertilizers Regulations.
 - .2 Complete, synthetic, slow release with [65] % of nitrogen content in water-insoluble form.

2.2 Source Quality Control

- .1 Obtain written approval from Departmental Representative of sources of sod at source.
- .2 When proposed source of sod is approved, use no other source without written authorization from Departmental Representative.

PART 3 EXECUTION

3.1 Examination

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for sod installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied [and after receipt of written approval to proceed from Departmental Representative.

3.2 Preparation

- .1 Do not perform work under adverse field conditions such as frozen soil, excessively wet soil or soil covered with snow, ice, or standing water.
- .2 Fine grade surface free of humps and hollows to smooth, even grade, to tolerance of plus or minus 15 mm for Commercial Grade Turf Grass Nursery, surface to drain naturally.
- .3 Remove and dispose of weeds; debris; stones [50] mm in diameter and larger; soil contaminated by oil, gasoline and other deleterious materials; off site or as directed by Departmental Representative in accordance with Section 01 74 21 - Construction/ Demolition Waste Management and Disposal.

3.3 Sod Placement

- .1 Lay sod within [24] hours of being lifted if air temperature exceeds 20 degrees C.
- .2 Lay sod sections in rows, joints staggered. Butt sections closely without overlapping or leaving gaps between sections. Cut out irregular or thin sections with sharp implements.
- .3 Roll sod as directed by Departmental Representative. Provide close contact between sod and soil by light rolling. Use of heavy roller to correct irregularities in grade is not permitted.

3.4 Fertilizing Program

- .1 Fertilize during establishment and warranty periods.

3.5 Cleaning

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
 - .2 Keep pavement and area adjacent to site clean and free from mud, dirt, and debris at all times.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
 - .1 Clean and reinstate areas affected by Work.
- .3 Waste Management: separate waste materials for reuse, compost, and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
 - .1 Remove recycling and compost containers and bins from site and dispose of materials at appropriate facility.
 - .2 Divert unused fertilizer from landfill to official hazardous material collections site approved by Departmental Representative.

3.6 Protection Barriers

- .1 Protect newly sodded areas from deterioration with snow fence on rigid frame or as directed by Departmental Representative.
- .2 Remove protection 2 weeks after installation as directed by Departmental Representative.

3.7 Maintenance During Establishment Period

- .1 Perform following operations from time of installation until acceptance.
 - .1 Water sodded areas in sufficient quantities and at frequency required to maintain optimum soil moisture condition to depth of 75 to 100 mm.
 - .2 Cut grass to 50 mm when or prior to it reaching height of 75 mm.

3.8 Acceptance

- .1 Sodded Commercial Grade Turf Grass Nursery Sod areas will be accepted by Departmental Representative provided that:
 - .1 Sodded areas are properly established.
 - .2 Extent of surface soil visible when grass has been cut to height of 60 mm is acceptable.
 - .3 Sod is free of bare or dead spots and extent of weeds apparent in grass is acceptable.
 - .4 Sodded areas have been cut minimum 2 times prior to acceptance.
 - .5 Fertilizing in accordance with fertilizer program has been carried out at least once.
- .2 Areas sodded in fall will be accepted in following spring one month after start of growing season provided acceptance conditions are fulfilled.

3.9 Maintenance During Warranty Period

- .1 Perform following operations from time of acceptance until end of warranty period:

- .1 Water sodded areas at weekly intervals to obtain optimum soil moisture conditions to depth of 75 to 100 mm.
- .2 Repair and resod dead or bare spots to satisfaction of Departmental Representative.
- .3 Cut grass and remove clippings that will smother grass as directed by Departmental Representative to height as follows:
 - .1 Commercial Grade Turf Grass Nursery Sod:
 - .1 60 mm during normal growing conditions
 - .2 Cut grass at 2 week intervals or as directed by Departmental Representative, but at intervals so that approximately one-third of growth is removed in single cut.
 - .3 Fertilize areas in accordance with fertilizing program.
 - .4 Eliminate weeds by mechanical means to extent acceptable to Departmental Representative.

END

Appendix A

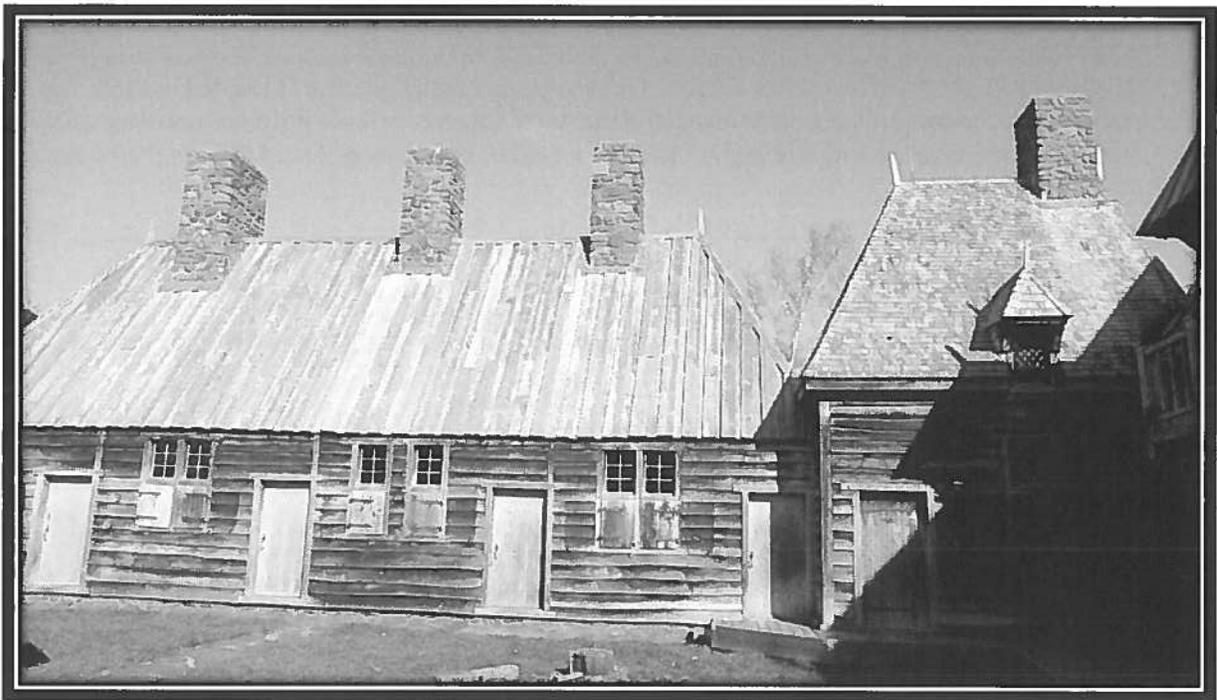


Basic Impact Analysis

Habitation Rehabilitation

Port-Royal National Historic Site of Canada

Parks Canada Agency



May 2017

MLNS-03-2017-PR





PROJECT TITLE & LOCATION	Habitation Rehabilitation Port Royal, NS Port Royal National Historic Site of Canada
PROPONENT INFORMATION	Jonathan Nash – Project Manager Mainland Nova Scotia Field Unit 902-426-6139 / jonathan.nash@pc.gc.ca
PROPOSED PROJECT DATES	Planned Commencement: July 2017 Planned Completion: December 2017
INTERNAL PROJECT FILE	MLNS-03-2017-PR

PROJECT DESCRIPTION

Port Royal National Historic Site consists of a number of historic and contemporary assets which include the Habitation (Figure 1). The Habitation (a Classified Federal Heritage Building Review Office [FHBRO] structure) was constructed in 1939-1940 as a replica of the original structures erected in 1605. The Habitation is the earliest large-scale reconstruction undertaken to achieve historical accuracy with some modern elements (electricity and asphalt roll roof lining) by the Government of Canada (Parks Canada 2001).

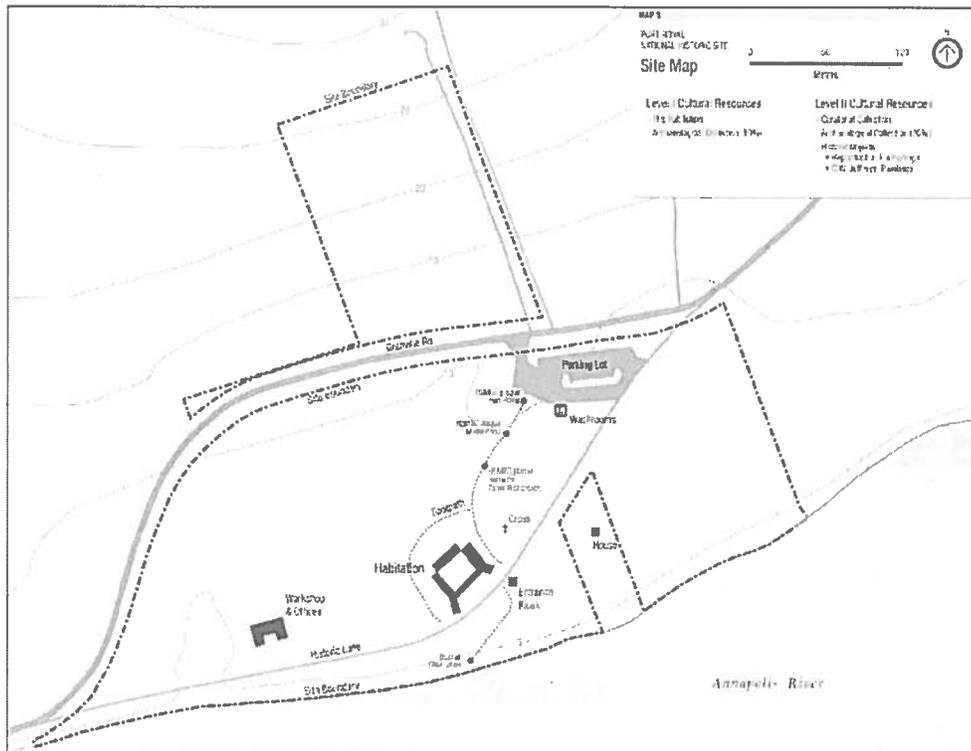


Figure 1. Port Royal National Historic Site - Site Map





The Port Royal Habitation encompasses several wooden buildings forming a quadrangle complex. The complex comprises a courtyard, well and gateway, forge, kitchen, bakery, community room, gun platform, cellar artisan's quarters, chapel, gentlemen's quarters, the Governor's dwelling, storehouse, cellar, trading room, guard room and palisade (Parks Canada 2001). An assessment on the condition of the Habitation was conducted in 2016, and concluded that the complex was in fair to poor condition (Parks Canada 2016). The key issues relating to the Habitation from the assessment included:

- Water infiltration through the roof, flashings and chimneys;
- High humidity in the building and lack of ventilation;
- Deteriorated wood and masonry elements due to water infiltration or exposure to the elements; and,
- Code/life safety and accessibility provisions in the building.

The Project

The Project will result in the rehabilitation of the Port Royal Habitation to prevent serious damage to the structures of the buildings and expensive future repairs. The rehabilitation is required to maintain a long service life of the historic structure. The project will include: replacing the existing roof with new wood boards and a modern membrane; new flashing to be installed around chimneys and repointing; and, replace rotten siding, palisades and out fort with new wood members. Old wood will be disposed of in accordance with provincial and federal regulations and as much wood as possible will be salvaged for re-use. Project Plans can be found in Appendix 1.

The activities relating to the project include:

- Site access: A gravel road starting from the parking lot leads to the work area. Materials will be staged near the rear of the Habitation.
- Demolition: manual demolition of deteriorating areas including removal of existing roof boards, siding, palisades, out fort, chimney flashing and other demolition-related debris.
- Waste disposal: management and removal of demolition waste off-site by contract and in accordance with provincial and federal regulations (e.g., wood, flashing, roof membrane, concrete waste).
- Toxic or hazardous materials: fuel, sealants, adhesives and concrete will be properly stored, handled and managed.
- Earthworks: soil and topsoil stripping/stockpiling, minor excavation to install new concrete foundation for palisades with 1 m off set, compaction, grading, improve drainage, erosion and sedimentation control, and restore landscape.
- Setup of temporary facilities: office, storage and washroom facilities will be situated in the staging area during the construction mobilization phase.
- Use of machinery: hand tools, electric saw, scaffolding, excavators, lifting devices, generators.
- Transport of materials and equipment: materials will be transported to the site using existing roads.

Stage 1 – Mobilization

- Install a temporary barriers for mark off boundaries of construction work site and staging area
- Post signage informing the public of upcoming site improvements and closure areas
- Locate utility lines prior to any earthworks
- Install temporary facilities (office/portable washrooms) in staging area
- Material delivered to site and stored in staging area





Stage 2 – Construction - The work will be completed in stages on each section of the building:

- The roof boards will be stripped. Boards in good condition will be stored for reuse, rotten boards will be disposed of.
- A modern roof membrane will be installed.
- Shingled roofs will have old shingles removed and replaced with new.
- The roof boards will be installed on top of the membrane.
- New lead flashings will be installed along the roof and chimney.
- The chimney will be repointed and a new cap installed.
- Rotten siding boards will be replaced.
- Rotten out forts will be dismantled and replaced with new

Stage 3 – Demobilization

- Site Clean-up and removal of temporary facilities.

VALUED COMPONENTS LIKELY TO BE AFFECTED

Valued components related to the Habitation rehabilitation have been considered and identified within the Effect Identification Matrix (Appendix 1) and are based on the potential impacts to *Natural Resources*, *Cultural Resources* and *Visitor Experience* associated with the undertaking.

Cultural Resources

Port Royal National Historic Site has been utilized by people of European ancestry since 1605 and for thousands of years by the Mi'kmaq. The current Habitation, constructed in 1939-40, is a replica of the original Habitation built in 1605. It is a Classified FHBRO structure and a Cultural Resource of National Significance.

Natural Resources

Water Quality: The project is located upslope from the marine environment. It is a dynamic environment subject to extreme weather events and high tides and supports a large variety of marine life.

Soil and Landforms: The Annapolis Valley's Triassic lowlands consist of sedimentary rocks of the Wolfville and Blomidon formations. The soils at Port Royal belong to the Glenmort series and are characterized as well-drained dark grayish brown sandy loam over a reddish brown sandy loam (Parks Canada 2009). The site is located in heavily disturbed area with maintained landscaping and limited downslope riparian habitat. The site is located upslope from the Annapolis River's edge. It is subjected to extreme weather events (e.g., high winds, freeze thaw cycles, rain, snow, and ocean wave spray).

Vegetation: This site is characterized with manicured grasses in the vicinity of the project with some small scattered stands of native shrubs and trees located within 10-20 m of the Project location. No flora species of concern have been identified in the area.

General Wildlife: Due to the heavy disturbance existing in the area within the Port Royal National Historic Site, the location provides limited habitat potential. However, the shrub and tree species located within 10 m of the Habitation site, may be attractive to a variety of migratory bird species which are protected under the *Migratory Birds Convention Act, 1994*. The project will take place during the migratory bird nesting season identified for the area (Environment Canada 2014). The Annapolis River located downslope from the Habitation is home to variety of fish species.





Species at Risk: In 2014, the Government of Canada emergency listed three species of bats as Endangered to Schedule 1 of SARA. These three bat species – little brown myotis, northern myotis, and tri-coloured bat – have been listed, as their survival is imminently threatened by a deadly and highly contagious disease, White-nose Syndrome (WNS). Under SARA these species are legally protected where they are found on federal lands. These legal protections prohibit:

- The killing, harming, harassing, capturing or taking of an individual of one of the three bat species;
- The possession, collection, buying, selling or trading of an individual or any part or derivative of an individual of one of the three species; and
- The damage or destruction of the residence or destruction of any part of critical habitat of one of the three species.

Built assets, like the Habitation, can offer shelter for bats, especially in areas where suitable natural shelters are limited or absent. Many parts of a built asset can be used by bats: roofing, siding, fascia boards, flashing and rafters, in cracks of chimneys or walls, behind shutters or under porch roofs. Bats do not create openings but rather use existing entry points. Bat species have been observed by Visitor Experience staff flying near and around the Habitation building in the past at dusk, though presence within the building is unknown. The Project will take place during the bat activity period.

Visitor Experience

Port Royal National Historic Site receives high visitation in the summer months, in particular 2017 is anticipated to draw in larger crowds for Canada’s 150th Birthday Celebrations. It is visited by tourists from around the world.

EFFECTS ANALYSIS

The effects on all valued components that have the potential to occur during the construction phase of the project are outlined in Table 1. The effects will be addressed through mitigations outlined in this BIA.

Table 1. Identified Valued Components that are potentially impacted by the proposed rehabilitation of the Port Royal Habitation.

Valued Component	Potential Impacts
Cultural Resources	<ul style="list-style-type: none"> • Adverse effects to archeological resources (known or potential from displacement or destruction). • Aesthetic and adverse impacts on character-defining elements of this federal heritage building. <p>Note: The limited excavation for this Project will occur within an area of highly disturbed soils which has been previously cleared by Parks Canada archeologists. It is not anticipated that the Project will have impacts to <i>in situ</i> Cultural Resources, but monitoring is recommended in the palisade area, which work probably won't take place until 2018. See the Archaeological Overview Assessment in Appendix 3. Potential impacts to built heritage aspects of the Habitation have been identified and will be mitigated by a FHBRO <i>Review of Intervention</i>. See Appendix 3. Generally, this project has been guided by the 2016 Indigenous Affairs and Cultural Heritage Directorate report (Parks Canada 2016).</p>





<p>Air Quality</p>	<ul style="list-style-type: none"> • Temporary decreased ambient air quality (i.e. from dust, equipment emission, etc.) during construction. • Temporary/intermittent increase in CO₂ levels and other pollutants during construction from use of equipment.
<p>Water Resources (i.e. ground, surface, marine environment, etc.)</p>	<ul style="list-style-type: none"> • Groundwater contamination from chemicals, concreted sediment, garbage, litter, wastewater or other liquids during construction/operation. • Localized changes to surface water hydrology could occur. • Erosion and sedimentation from earthworks activities may contaminate the water resources. <p>Note: The project is greater than 30 m from the marine environment. Due to the distance from the marine environment, the activities related to the rehabilitation and the small amount of excavation required for the palisades foundation, potential sedimentation related to the activities is impacts to marine water quality would be minimal, if any.</p>
<p>Soils & Landforms</p>	<ul style="list-style-type: none"> • Soil compaction and rutting in area of construction • Soil contamination from contaminants/chemicals being used for construction (i.e. fuel, sealants, concrete, garbage). • Increased disturbance footprint from regular use. • Changes in land surface characteristics. • Soil erosion during earthworks activities • Loss of topsoil and exposure of subsoils. <p>Note: Equipment will use existing gravel roads to travel on and transport material to site; much of the work will take place in existing disturbed areas or require a small increase in footprint size for excavation which reduces the potential impacts.</p>
<p>Vegetation</p>	<ul style="list-style-type: none"> • Disturbance of adjacent natural vegetation from trampling/equipment operation, excavation and people • Potential root exposure and physiological stress • Damage from accidental spills (i.e. fuel, wastewater, concrete waste) • Introduction of invasive/exotic plant material from soiled machinery/equipment or earth exposure <p>Note: Vegetation clearing (tree and/or shrub) is not required; much of the work will take place on existing disturbed areas or require a small increase in footprint size for excavation.</p>
<p>Wildlife</p>	<ul style="list-style-type: none"> • Operation of equipment and noise may result in temporary habitat displacement/preferred habitat avoidance, including disturbance to nesting birds and/or their nests. • Artificial food sources such as garbage and litter may encourage habituation/attraction of wildlife • Direct harm/mortality from accidental spills (i.e. fuel, wastewater, and concrete waste). • Damage to dens, nests, roosts and disruption of denning, nesting or roosting animals in the immediate area of the structure. • Indirect mortality of fish, eggs larvae, invertebrate, etc. from runoff which may be sediment laden or have harmful pollutants).





	<ul style="list-style-type: none"> • During construction, lights can adversely impact birds especially night-flying birds attracted to lights during fog, drizzle, haze, storm, etc. which result in collisions. <p>Note: the majority of work will take place on existing disturbed areas that do not represent good quality nesting habitat; no vegetation clearing (trees and/or shrub) is required; and there is a pre-existing high level of human activity on the site.</p>
Species at Risk	<ul style="list-style-type: none"> • Damage to dens, nests, roosts and disruption of denning, feeding or roosting animals in the immediate area of the Habitation. • Operation of equipment and noise may result in temporary habitat displacement or exclusion preferred habitat. • Unnatural lighting or construction activities during peak feeding times. <p>If a maternity roosts was determined to be present at the Habitation, construction activities could have the following negative impacts:</p> <ul style="list-style-type: none"> • Direct mortality or injury to roosting females or pups • Disturbance to roosts resulting in mortality or distress • Blocked access to roost sites • Changes in ventilation resulting in mortality or distress • Paint fumes or other odours or toxins • Excessive noise or light disturbance
Visitor Experience	<ul style="list-style-type: none"> • Decreased quality of visitor experience due to restricted access to Port Royal National Historic Site and construction activities, operation of equipment, sensory disturbance. • Decreased aesthetic appeal and impacted viewscape • Potential hazards to visitors and staff safety due to construction activities and movement of equipment by those attempting to approach closure areas. • Loss of education opportunities due to decreased accessibility to the site during peak visitor use times.

MITIGATION MEASURES

The following mitigation measures have been developed to help reduce any adverse environmental impacts resulting from the planned activities of the Habitation Rehabilitation Project.

General

- 1) Inform the Impact Assessment Officer (IAO), regarding any changes to project plans and/or scheduling. Any changes not assessed under this BIA will require approval from Parks Canada and may require further mitigation measures.
- 2) An Environmental Protection Plan (EPP) will be prepared by the contractor that outlines the mitigations for the valued components and related plans identified within this BIA. The requirements of the EPP will be scaled to the scope and associate risks of the Project as outlined in the BIA and/or determined by the IAO. The EPP will be developed by a qualified professional and is subject to approval by the IAO prior to the commencement of construction activities.
- 3) The prime contractor is responsible for ensuring that a Spill Response Plan is developed prior to the start of work and the plan is subject to approval of the IAO prior to the commencement of construction activities. The Spill Response Plan can be a standalone document or incorporated as an Appendix to the EPP.





- 4) All employees must attend an environmental briefing with an Environmental Surveillance Officer (ESO) before beginning work at the site to review mitigation measures and any site-specific considerations.
- 5) All activities on the premises shall be conducted in compliance with national and provincial applicable environmental regulations and in accordance with accepted environmental practices.
- 6) A copy of the mitigation measures shall be present and available at the work site.

Environmental Surveillance

- 1) The project is subject to environmental surveillance by the ESO to ensure that mitigation measures as outlined are implemented during all phases of construction, including start-up, excavation, demolition, construction, clean-up and site restoration.
- 2) The ESO will report deficiencies to the Project Manager (PM) and summarize the site visit observations in a surveillance report. The surveillance report will be filed to supplement information for updated mitigation, follow-up monitoring and/or restoration activities in the future.

Work Site Conditions/Staging/Laydown:

- 1) The laydown/staging area will be located on an existing disturbed area near the back of the Habitation building; natural vegetated areas will not be used for parking or laydown. The existing gravel roads will be used to access the construction site unless otherwise approved by Parks Canada.
- 2) Delineate work zone, clearly mark the limits to active construction (staging area, work site, restricted areas), sensitive features and the access and egress locations; marking can be completed with stakes, biodegradable flagging tape, fencing, temporary gates or other means; remove materials when project is completed.
- 3) The contractor is responsible for security and safety of the work site.
- 4) Isolate operations and ground intrusion activities, including foot traffic, to the footprint of the immediate construction area, the existing gravel road and other existing disturbed areas as much as possible; limit vehicular access to essential vehicles only.
- 5) Maintain a tidy work site, with clean-up of dust and debris at the end of each day. The contractor must provide on-site dump containers for collection of waste materials and debris which will be stored at least 30 m from a waterbody. Construction waste storage containers, shall be emptied when 90% full. Waste containers will have lids, be wildlife proof if containing attractants.

Equipment Operation:

- 1) Equipment from outside the national historic site must be washed prior to arrival. Equipment and vehicles may be inspected by the ESO.
- 2) Equipment must be properly tuned, clean and free of contaminants, in good operating order, free of leaks (e.g., fuel, oil or grease), and fitted with standard air emission control devices and spark arrestors prior to arrival on site. Vehicles found leaking hazardous materials will be ordered off-site.
- 3) During construction, any required cleaning of tools and equipment must be done greater than 30 meters from the shoreline to prevent the release of wash water that may contain deleterious substances.
- 4) Equipment operators must be fully trained and experienced.
- 5) Use low pressure/rubber tracked equipment or access matting where feasible to minimize soil compaction and ground disturbance.
- 6) Minimize idling of engines, contingent on operating instructions and temperature considerations.
- 7) Machinery (e.g., excavators, bobcats, chainsaws, and generators) must be stored, maintained and refuelled on a flat and impermeable surface, outside the dripline of trees and a minimum of at least





30 meters from the shoreline. Leaks and spills during refueling must be cleaned up and contaminated materials disposed of appropriately. Fuel must never be dispelled or deposited into the environment or any water body.

- 8) Only minor repairs and maintenance (e.g., lubrication) of 'non-mobile' equipment such as flatbeds or shovels are permitted; all major repairs must be undertaken at an appropriate offsite location.

Site Clean-up and Waste Disposal/Management:

- 1) All solid waste will be securely stored and handled according to applicable federal/provincial regulations.
- 2) All waste materials (e.g., construction material, refuse material, waste petroleum, and demolition waste) shall be removed from the site on project completion and considered, prior to disposal, for reuse, resale or recycling and then disposed of at an approved facility; cover waste loads during transportation.
- 3) No construction waste (sawdust, soil, debris, pumped water, hydrocarbon, chemicals, concrete, etc.) shall be allowed to enter an aquatic habitat or be deposited on undisturbed lands.
- 4) Contain wastes and transport to an approved waste landfill site outside the Parks Canada protected heritage place, unless otherwise directed; cover waste loads during transportation. All construction materials must be removed from the site on project completion.
- 5) Burning of waste is not permitted at the National Historic Site.
- 6) Sanitary facilities, such as portable container toilet, shall be provided and maintained in a clean condition. Sanitary facilities must be in good condition, and located away from sensitive resources including water bodies at a location approved by the IAO.

Hazardous Materials:

- 1) Follow all applicable regulations and codes for the management and handling of hazardous waste.
 - a) Identify and handle all toxic/hazardous materials as required under the *Canadian Environmental Protection Act, Transportation of Dangerous Goods Act* and Workplace Hazardous Materials Information System.
 - b) Dispose of contaminated materials at provincially certified disposal sites outside of Parks Canada land.
- 2) Prevent the release of hazardous substances into the environment, including but not limited to, paints, chemicals and petroleum products and their derivatives.
- 3) All on-site personnel must be briefed on reporting requirements for hazardous materials spills; spills must be reported immediately to Parks Canada (Jonathan Nash, Project Manager).
- 4) All construction sites must be equipped with containers suitable for the secure, temporary storage of hazardous wastes, separated by type.
- 5) A spill contingency response kit including sorbent material and berms to contain 110% of the largest possible spill (i.e., fuel or other toxic liquids) related to the work must be available on site at all times. On-site personnel must be aware of its location and trained in its use. Any contaminants must be recovered at source and disposed of according to applicable laws, policies and regulations.
- 6) All spills must be contained and cleaned-up as soon as possible. In the event of a major spill, all other work must stop until the spill has been adequately contained and cleaned up.
- 7) The PM (Jonathan Nash 902-426-6139) and ESO shall be notified immediately of any spill. In the event of a major spill, Environment Canada oil spill and pollution (24 hr) reporting line (1-800-565-1633) shall be notified immediately. All other work shall be stopped and all personnel devoted to spill containment and clean-up.





- 8) Handle and store hazardous materials as per applicable federal legislation/regulations. The contractor must have all relevant and current Material Safety Data Sheets available onsite.
- 9) Petrochemical products, paints and chemicals must be stored 100 m from the shoreline. They must be secured overnight in a Parks Canada approved enclosed area under lock and key.
- 10) Any hazardous waste or contaminated material uncovered during excavation/construction must be investigated, source identified, removed and disposed of outside the protected heritage place at an approved facility. Disposal documentation must be provided to Parks Canada (Jonathan Nash, Project Manager).

Cultural Resources

- 1) Cultural and archaeological resource protection requires isolating operations to the footprint of the immediate construction area as defined in the project description.
 - a) Parks Canada Cultural Resource Manager, Keith Mercer, must be consulted in advance of any digging or excavation activity outside of the planned footprint to address potential impacts to cultural resources.
- 2) If cultural or archaeological resources are encountered, **operations will halt immediately** and Parks Canada notified (Jonathan Nash, Project Manager). If features (i.e., structural remains and/or artifact concentrations) are encountered, leave in place, mark the location (e.g., prominent flagging), record the finding (e.g., digital photograph, GPS coordinates, notes) and do not disturb prior to completion of an archaeological assessment by Parks Canada. The contractor shall only resume activity with the authorization of Parks Canada.
- 3) Parks Canada must be informed of any unforeseen changes to the project for review and evaluation by Cultural Resource Management.
- 4) Specific instructions on mitigation for archaeology and built heritage can be found in Appendix 3, with the Archaeological Overview Assessment and the request for a FHBRO *Review of Intervention* (Appendix 3).

Natural Resources

Air Quality

- 1) The effects on air quality and noise from construction activities are generally controlled by good construction practice and proper equipment function which involves the use of well-maintained heavy equipment and machinery, preferably fitted with fully functional emission control systems/muffler/exhaust baffles, engine covers, etc.
- 2) Diesel equipment used on the Project shall be fuelled with low sulfur diesel fuels and shall conform to local emissions requirements.
- 3) Minimize idling of engines at all times
- 4) Schedule dust generating activities during periods with lower wind speeds.
- 5) Ensure fine materials being transported are covered and protected.

Water Resources:

- 1) Concrete mixing activities must take place over tarps and a minimum of 30 m from waterbodies. Fresh, wet, uncured concrete and concrete dust must not come into contact with waterbodies. Secondary containment measures such as collection/drip trays and berms lined with air and water-tight material such as plastic and a layer of sand, and double-lined fuel tanks are required.





- 2) Temporary concrete washout facilities shall be located a minimum of 30 m from storm drains inlets, open drainage facilities, watercourses, water bodies or wetlands.
- 3) Excess concrete must be disposed of at an appropriate facility outside of the Parks Canada protected heritage place. If excess concrete from pump trucks must be dumped prior to transport outside the protected heritage place, it must be deposited in a location approved by Parks Canada and removed following hardening for disposal at an approved facility.
- 4) Waste materials (e.g., organic materials, soil stockpiles, construction waste, plastic wrap and garbage) must not enter the marine environment. Securely store in place, especially during high wind/storm conditions.
- 5) All cuttings, sawdust and other wood waste material must be collected and disposed of at an approved disposal facility.

Soil and Landforms:

- 1) The contractor must prepare an erosion and sediment control plan and submit to Parks Canada for approval prior to the start of earthworks activities.
- 2) Erosion and sedimentation controls must be installed prior to earthworks activities commencing. Regularly inspect and maintain erosion and sediment control structures during all phases of the project and modify measures as necessary. Particular attention must be paid to activities at the lower MEP area closest to the marine environment. Multi-barrier sediment controls must include local and project perimeter impediments to sediment.
- 3) Use erosion and sediment control products made of 100% biodegradable materials (e.g., jute, sisal or coir fiber), when possible. Ensure backing materials are also biodegradable.
- 4) When excavation is required, schedule work to avoid wet, windy and rainy periods that may increase erosion and sedimentation.
- 5) Limit duration of soil exposure; phase activities whenever possible and restore disturbed areas as soon as possible.
- 6) Topsoil separation is required; stockpile topsoil away from subsoils and spoil material and more than 30 meters away from the shoreline, drainage features and/or the top of steep slopes. Excavated material should be stored on hardened surfaces, geo-textile material.
- 7) Stockpiles will not be located on vegetated areas unless approved by Parks Canada.
- 8) Cover all stockpiled material to prevent erosion during precipitation events.
- 9) All trenches left unattended overnight must be fenced or covered to prevent wildlife entrapment or provide appropriate egress for wildlife. Workers must inspect for trapped wildlife prior to backfilling.
- 10) Surface water shall be directed away from work areas. Water must not be pumped directly into the marine environment; sediment must be removed by pumping onto a vegetated area a minimum of 30 meters away from the shoreline. Soil and vegetation erosion protection is required for water pumped on to land.
- 11) In locations where drainage is to be improved, prior to backfilling, clean infill with free draining granular material (i.e. crushed rock - 50 mm to 150 mm in diameter) will be used to improve drainage around palisade and gun platforms, if required.
- 12) Backfill material will be compacted prior to topsoil replacement; distribute topsoil evenly over the excavated area as per Parks Canada specifications.
- 13) Overburden that cannot be used for final grading will be disposed of outside the national historic site at an approved location.
- 14) Remove temporary erosion and sediment control products, especially non-biodegradable materials, when they are no longer required.





- 15) When earthworks activities are complete, shape loosened soils to match the local terrain and ensure noticeable construction impacts (e.g., ruts, holes, depressions, compacted areas) are appropriately re-graded, back-filled with topsoil, re-contoured and capped.
- 16) Stabilize the site to prevent erosion and allow for natural re-vegetation.
- 17) Additional mitigation measures for cultural and archeological resources during excavation are found in the **Cultural Resources** Section.

Vegetation:

- 1) Introduction of invasive plant species must be prevented and spread of non-native species minimised:
 - a) All soil, gravel, untreated construction lumber, erosion and sediment control products (e.g., hay, straw, mulch), or other applicable materials from outside the protected heritage place must be from a certified weed-free source and be approved by the designated Parks Canada staff.
 - b) Minimise bare soil exposure (e.g., cover stockpiled material with tarps, natural mulch/ground coverings).
 - c) Minimise ground disturbance and vegetation removal, as practical and within project requirements.
 - d) All construction equipment from outside the Parks Canada protected heritage place must be washed outside the site prior to arrival to minimize risk of introducing invasive weed species. Proof that this mitigation was applied will be requested before equipment is permitted entry.
 - e) Organic materials (e.g. topsoil, borrow and fill material, gravel) taken from the construction site will not be used in other parts of the protected heritage place unless approved by the designated Parks Canada staff.
 - f) Stabilize and re-vegetate disturbed areas as soon as possible, ideally with native plants, soil and seed mix or otherwise approved by designated Parks Canada staff. If there is insufficient time remaining in the growing season, stabilize the site to prevent erosion and vegetate the following spring.
- 2) Stockpiles should be located on previously disturbed areas; any use of natural vegetated areas must be pre-approved by Parks Canada.
- 3) Trees must be preserved and left in place. All existing trees within 10 m of the construction activities shall be fenced off beyond the drip line. Fencing should be highly visible to reduce the chance of equipment strikes damaging trees.
- 4) All vegetation has the potential to provide habitat for wildlife. Vegetation removal is not anticipated, however, if warranted, no vegetation removal shall occur without approval from the ESO.
- 5) Protect roots of trees to drip line to prevent disturbance or damage. Avoid traffic, dumping or storage of materials over root zone.
- 6) Excavation work shall avoid the root zone within the drip line.
- 7) Re-vegetation of the disturbed areas shall be completed by sodding to avoid potential contamination of marine environments by hydroseeding and/or washing away of seed.
- 8) No application of fertilizer or pesticides should take place during restoration or seeding of grasses.

General Wildlife:

- 1) All wildlife attractants must be secured (e.g., petroleum products, human food, recyclable drink containers and garbage) within wildlife-proof containers, in a secured building or a vehicle. Keep food waste separate from construction waste and remove daily. Notify Parks Canada immediately should wildlife gain access to the above mentioned attractants.





- 2) All garbage/debris kept on-site more than 1 working day must be free of food matter that may attract and feed wildlife.
- 3) No feeding, baiting or luring any wildlife (includes bears, small mammals, and birds); do not approach or harass wildlife in any way. Notify the ESO immediately if wildlife obtain garbage or human food.
- 4) Clearly delineate and enforce construction limits (e.g., snow fence, flagging tape) taking species and habitat into account.
- 5) Stay within the construction limit, including staging areas.
- 6) Use existing disturbed areas and right-of-ways whenever possible.
- 7) Keep people, equipment and vehicle traffic to a minimum.
- 8) Limit construction activities to the time between dawn and dusk to avoid the illumination of adjacent habitat.
- 9) Migratory birds, their nests and eggs and nestlings are protected under the *Migratory Birds Convention Act, 1994* (MBCA). Project works or activities (i.e. noise) are potentially disruptive activities to birds, their nests or eggs or nestlings and should be avoided at key locations or during key periods such as breeding or times of high use such as migration and/or feeding. The migratory bird nesting season is between May 1 and August 15. During this time period, the following must be implemented:
 - a) Contractor must notify Parks Canada a minimum of 10 days prior to the start of construction activities. The construction limits may be surveyed for evidence of breeding bird activity by the Parks Canada ESO within 7 days of construction commencing.
 - b) There is a risk of delays to Project activities due to the presence of nesting migratory birds.
 - c) Should breeding bird activity (i.e., nest or behavioral cues) be discovered, a buffer zone(s) of approximately 30m will be established around the area. Work will not be permitted to proceed within this buffer zone until the Parks Canada ESO confirms that young have fledged. Limits of the buffer zone will be flagged by the ESO to clearly identify the area especially in the direction of approaching construction activities.
 - d) Upon contractor/sub-contractor discovery of nests or breeding activity (e.g., alarm calls when approaching an area, adults repeatedly carrying nesting materials or food to the same location, aggressive defense behaviours [against other birds or people], sound of fledglings begging for food) stop work immediately and contact the ESO.
 - e) If there is evidence that an established buffer zone is ineffective (e.g., continued agitation/guarding behaviour) work must stop immediately and the setback distance adjusted by the ESO.
 - f) Any likely or confirmed harm, death, disturbance or destruction of migratory birds, nests and eggs, must be reported immediately to Parks Canada and mitigations adjusted as necessary by the ESO.
 - g) The ESO will monitor the area during construction to ensure the established buffer zone(s) is effective.
 - h) Activity restriction within a buffer zones can only be lifted upon confirmation from the ESO that young have fledged.

Species at Risk:

Parks Canada manages park lands and historic sites that include caves, forests and even buildings that are ideal habitat for bats throughout their life cycle. The ability of Parks Canada to keep these places intact and functional helps bats stay as healthy as possible and will hopefully make them more resilient to threats such as white-nose syndrome.





- 1) If construction activities occur during **April 15 to September 1**, the building will require a Bat Building Evaluation to determine the potential use of the building (i.e. none, day roost, night roost, maternity roost, or hibernacula). Results of the evaluation will be used to determine the appropriate site-specific mitigations and prevent any residual effects of Project activities on bat species.
 - a) There is a risk of **delay** to project activities if bats are determined to be present at the Habitation until disturbance can be avoided.
 - b) Additional pre-construction surveys may be completed by the IAO up to 7 days in advance of construction activities, if warranted.
 - c) If no bats are observed using the Habitation but found foraging in close proximity to construction activities, timing of construction activities will be **restricted to daylight hours** from one half hour after sunrise to one half hour before sunset, in order to minimize disturbance and undue stress to bat species.
- 2) If construction personnel observe any bats and/or sign (i.e. guano) during construction activities, work will be halted and the ESO must be notified immediately. In consultation with the Species Conservation Management Team, the ESO will determine appropriate site-specific mitigations. Work will not be permitted to proceed until approved by the ESO.

Visitor Experience

- 1) Construction should be completed in as short a time period as is practicable.
- 2) Maintain the site in as tidy a condition as possible for the duration of work.
- 3) Work to be staged/phased to allow visitor access to the Habitation. Use of scaffolding will be limited and will allow visitor access to all doorways. Work will be phased to focus on completing areas entirely prior to moving on to the next roof system/construction zone.
- 4) Safety risks to visitors during construction must be minimized:
 - a) The work site must be closed and clearly delineated with fencing, barriers, temporary gates, caution tape, or combination thereof.
 - b) Appropriate bilingual signage must be posted at common visitor access points and strategic locations.
 - c) Maintain a safe working distance between work activities and visitors, especially when transporting machinery and materials between the staging area and the site; consider the use of lookouts to manage traffic and direct visitors in this area.
 - d) Secure and clearly mark unattended safety hazards (e.g., debris piles) with fencing, warning signs, caution tape or combinations thereof.

OTHER Considerations

- Public/stakeholder engagement
- Aboriginal engagement or consultation
- Surveillance (It is recommended that the ESO assigned to this project visit the site regularly during construction activities to ensure that the mitigation measures detailed in this BIA are adequately carried out and to provide additional mitigation for unforeseen impacts. He or she will be kept informed of project scheduling and will be notified of changes to the schedule at all times).
- Follow-up monitoring, required to evaluate effectiveness of mitigation measures and/or assess restoration success
- Follow-up monitoring, required by legislation or policy (indicate basis of requirement e.g. required by the *Species at Risk Act*)



May 2017



SARA Notification





SIGNIFICANCE OF RESIDUAL ADVERSE EFFECTS

Given the magnitude of effects, the phasing of project activities, the low potential for *In-situ* archaeological resources and application of mitigation measures within the BIA and FHBRO *Review of Intervention*, the project is unlikely to result in significant residual adverse effects to natural resources, cultural resources or visitor experience.

EXPERTS CONSULTED

Department/Agency/Institution: Parks Canada	Date of Request: February 2017
Expert's Name & Contact Information: Keith Mercer	Title: Cultural Resource Manager, Mainland Nova Scotia Field Unit
Expertise Requested: cultural resources, archaeological resources	
Response: FHBRO Request for Review of Intervention (Appendix 3); Archaeological Overview Assessment (Charles Burke, Terrestrial Archaeology)	

Department/Agency/Institution: Parks Canada	Date of Request: February 2017
Expert's Name & Contact Information: Wayne Melanson	Title: Interpretation Officer/Coordinator
Expertise Requested: Port Royal National Historic Site	
Response: <ul style="list-style-type: none"> • Bat species have been observed flying around the Habitat building in the past. Uncertain if they are using the building but is a possibility as there are locations they can squeeze in. • Uncertain if they are still present, but typically no staff are at the site at dusk or dawn when bats would be most active. • Annual dinner by the historic society at Port Royal, and bats were observed during clean-up afterwards. 	

Department/Agency/Institution: Parks Canada	Date of Request: February 2017
Expert's Name & Contact Information: Darren Ure	Title: Species Conservation Specialist
Expertise Requested: Bats in Built Assets	
Advises pre-construction bat survey should be conducted to confirm presence. Additional site-specific mitigation strategy may be required and will be determined if bats are confirmed to be using the infrastructure.	

DECISION

Taking into account implementation of mitigation measures outlined in the analysis, the project is:

- not likely to cause significant adverse environmental effects.





likely to cause significant adverse environmental effects.

NOTE: If the project is identified as likely to cause significant adverse effects, CEAA 2012 prohibits approval of the project unless the Governor in Council (Cabinet) determines that the effects are justified in the circumstances. A finding of significant effects therefore means the project CANNOT go ahead as proposed.

FOR SARA REQUIREMENTS:

There are no residual adverse effects to species at risk and therefore the SARA-Compliant Authorization Decision Tool was not required

Note: If bats are observed during pre-construction surveys, SARA requirements will be amended and managed accordingly and SARA Authorization may be required.

RECOMMENDATION AND APPROVAL

Prepared by: Elizabeth Walsh, Impact Assessment Officer, Mainland Nova Scotia Field Unit	Date: May 24, 2017
Recommended by: Functional Manager of the Project: Mark Garnett, Asset Manager, Mainland Nova Scotia Field Unit	Date: May 24, 2017
Approval signature: Julie Tompa, Field Unit Superintendent, Mainland Nova Scotia Field Unit 	Date: 

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 Website: <https://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=4F39A78F-1>
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Parks Canada. 2009. Special Events in the Southwest Nova Scotia National Historic Sites of Canada: Replacement Class Screening Report Extension. Halifax, NS. 99 pp.

Parks Canada. 2016. Draft: Preliminary Building Condition and Issues Report. Habitation, Port Royal, Nova Scotia. Dated: May 24, 2016. Prepared by: Built Heritage Section, Cultural Heritage Policies Branch, Indigenous Affairs and Cultural Policies Directorate. Gatineau, PQ. 76 pp.

ATTACHMENTS

- Appendix 1: Habitation Renewal Project Survey Drawings
- Appendix 2: Effects Identification Matrix
- Appendix 3: Archeological Overview Assessment and FHBRO Request for Review of Intervention

NATIONAL IMPACT ASSESSMENT TRACKING SYSTEM

Project registered in tracking system





Not yet registered (*CEAA 2012 requires PCA submit a report to Parliament annually. EIAs must be entered in the tracking system **by the end of April** to enable reporting.*)

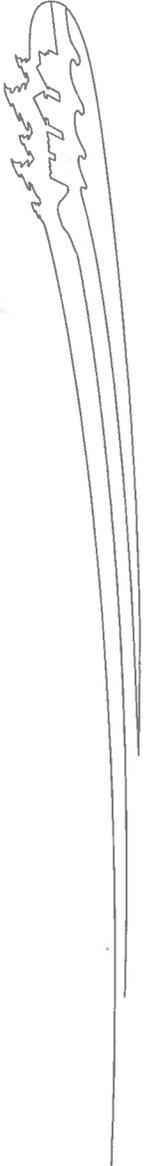
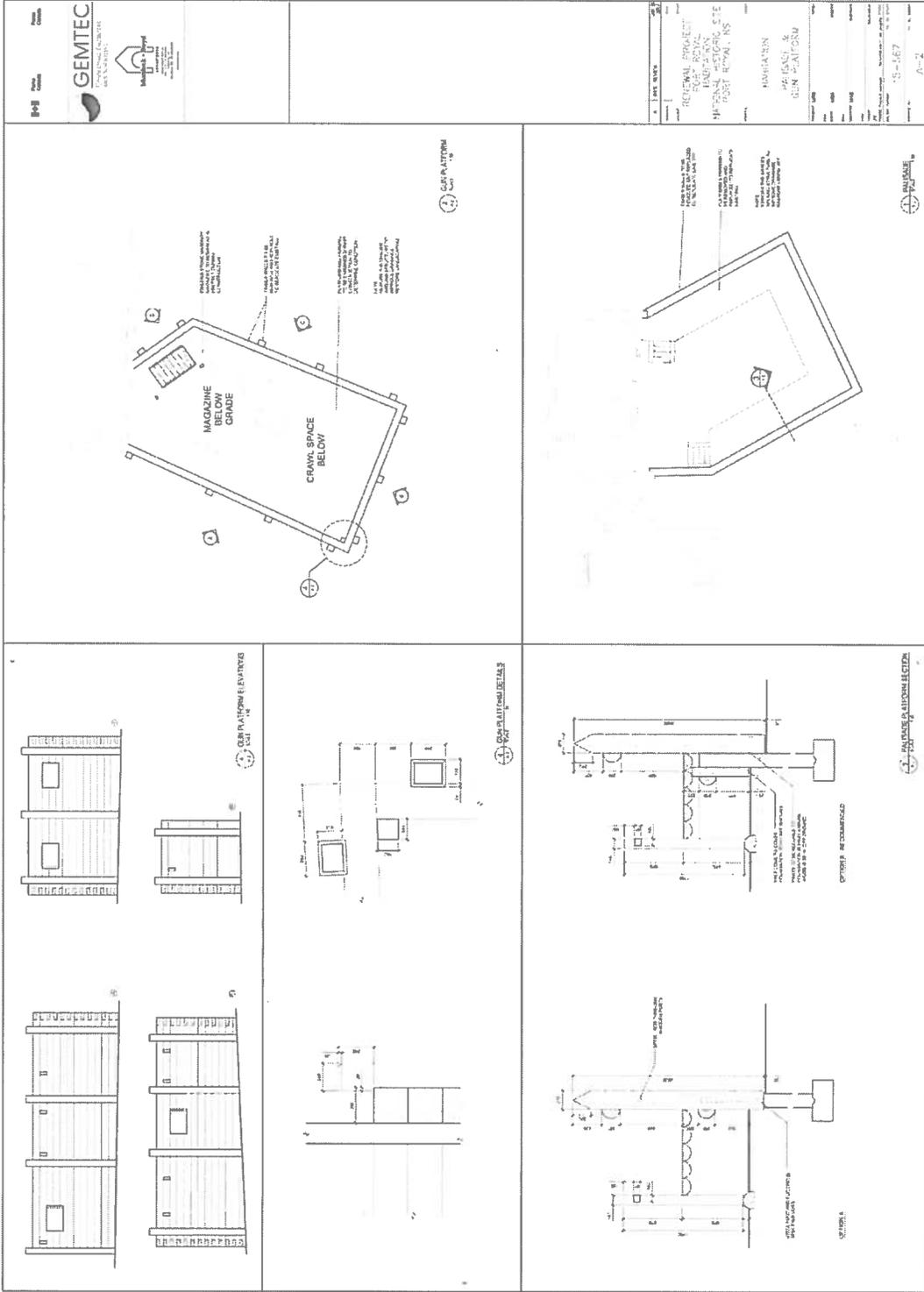
*****Ensure that all required mitigation measures and conditions (e.g. follow-up monitoring requirements) are included in project permits and authorizations*****





March 2017

Source: Drawing A-2 in the project drawing package.

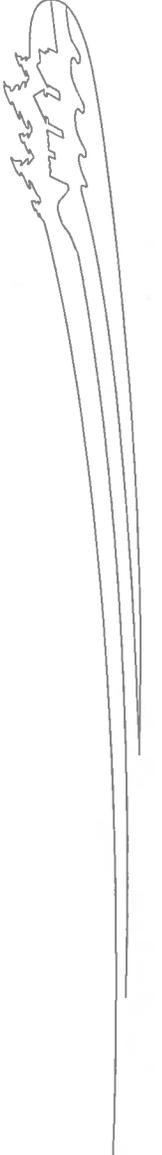


March 2017

Source: Drawing A-2 in the project drawing package.



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<p>GENERAL CONTRACTOR FOR THE PROJECT 17822 2ND STREET, N.W. SITE PORT MOGUE, WA</p>	
<p>HABITATION & INTERIOR ELEVATIONS</p>	
<p>DATE: 11-11-17 SCALE: AS SHOWN DRAWN BY: [Name] CHECKED BY: [Name]</p>	
<p>INTERIOR WEST ELEVATION INTERIOR SOUTH ELEVATION INTERIOR NORTH ELEVATION</p>	<p>INTERIOR EAST ELEVATION INTERIOR WEST ELEVATION INTERIOR SOUTH ELEVATION</p>
<p>WEST ELEVATION EAST ELEVATION SOUTH ELEVATION NORTH ELEVATION</p>	<p>WEST ELEVATION EAST ELEVATION SOUTH ELEVATION NORTH ELEVATION</p>





Appendix 2 Effects Identification Matrix

Section A focuses on direct effects of the project and **Section B** on indirect effects that are caused by changes to the environment.

Direct Effects (during site preparation/construction phases)													
		Components potentially directly affected by the proposed project											
		Natural Resources						Cultural Resources		Visitor Experience			
		Air	Soil & landforms	Water (surface, ground, marine)	Vegetation	General Wildlife	Species at Risk	Cultural landscape	In Situ Cultural Resources	Visitor Access & Service	Viewscapes & Soundscape	Visitor Safety	Essence of place
	Associated Activities												
Project Components	Preparation, Operation, Implementation & Decommissioning Phases	Supply and storage of materials	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Transport of materials/equipment	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Set up of temporary facilities	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Clearing	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓
	Excavation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Demolition	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	Concrete	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Use of machinery	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Use of Chemicals	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Backfilling & Grading	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Construction traffic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Disposal of waste	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Removal of temporary facilities	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Site Remediation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	





Appendix 3: Archeological Overview Assessment and FHBRO Request for Review of Intervention

Archaeological Overview Assessment:
Port Royal Habitation NHS Stabilization
FII Project 738
Port Royal, Nova Scotia

Charles A. Burke, Archaeology and History Branch, May 18 2017

Reason for Assessment

The Mainland Nova Scotia Field Unit has completed a condition assessment of the Port Royal Habitation and proposes a number of stabilization options for Port Royal (Figure 1) that include repairs to the walls, roof and windows. The Habitation was constructed in 1939-1940 and most of the exterior wood elements have deteriorated. The roof membrane has reached the end of its life and needs to be replaced as well. Rehabilitation of the palisade will involve replacement of existing timber. New timbers will be placed in a concrete footing that will be mechanically excavated.

The heritage character of the Port Royal Habitation resides in its distinctive form and massing, its materials and finishes, and the relationship of the entire ensemble to the natural setting. The Habitation is a picturesque group of six buildings, each with steeply pitched roofs and tall chimneys, and linked together to form a quadrangle. The buildings were constructed using traditional construction methods and native materials including fieldstone, hewn timbers and brick. The stone elements – chimneys, well and pathway – juxtaposed with the weathered patina of the wood is a character defining feature which must be maintained.

1

Port Royal Habitation is a Classified Federal Heritage Building because of its historical associations, its status as an architectural reconstruction, and its environmental significance. A Request of Intervention (ROI) for the Habitation has been submitted to the Federal Heritage Buildings Review Office (FHBRO).

This assessment evaluates only those activities that may impact buried archaeological resources. It evaluates the archaeological potential to discover undisturbed resources within the proposed work zones and determines which aspects of the project require an archaeological impact assessment (AIA).

Background

Port Royal was designated as a National Historic Site of Canada in 1923. As noted in its Commemorative Integrity Statement, "*Port Royal is a national historic site because of its legacy – French culture, commerce and colonization, and the experiences of Mi'kmaq and French colonists 1605-1613; and the replica of the Habitation is a milestone in the Canadian heritage movement.*" The dominant feature of Port-Royal National Historic Site is the reconstructed





Habitation completed in 1939 on what was believed to be the original site of the 17th-century Habitation of the French colonists. This impressive reconstruction comprises a series of adjoining buildings, a courtyard, a palisaded enclosure protecting the entrance, and a gun platform opposite covering seaward approaches. The replica of the Habitation is of national historic significance as a milestone in the Canadian heritage movement. The Habitation is a cultural resource of national significance (formerly level 1) Other resources of national historic significance include an archaeological collection recovered at the time of the reconstruction (although nothing relating to the original Habitation was found), historic objects, such as reproduced furnishings, and the designated place itself.

Proposed Work and Potential Impact on Archaeological Resources

Although aspects of the proposed repairs will have an impact on the soils and cultural deposits within and around the reconstructed Habitation, it is unlikely there will be an impact to undisturbed contexts associated with the site’s reason for commemoration. This AOA assesses the proposed work detailed in the **Preliminary Building Condition and Issues Report: Habitation, Port Royal, Nova Scotia. Prepared by: Built Heritage Section, Cultural Heritage Policies Branch, Indigenous Affairs and Cultural Policies Directorate, Parks Canada. 2016**

Archaeological Potential

2

Port Royal NHS was the first large scale reconstruction undertaken by the federal government to commemorate Canadian history and illustrates an early attempt to achieve historical accuracy. The replica is recognized as well for the precedent it set and reinforced - the importance of both historical and archaeological research to an accurate reconstruction. As such, the replica has made a significant contribution to Canada’s heritage movement and opened the door to more complex projects that incorporated history and archaeology as a matter of course.

Nevertheless, in 1938, the use of archaeology to understand sites without visible remains was a departure from Canada’s official approach to preserving the past. When the archaeology began, the investigations followed standard procedures - methodical digging and recording, artifact collection, and profile analysis. Although the archaeologist’s credentials were in an unrelated discipline, he had experience in the Mount Vernon and Williamsburg reconstruction programs and was clearly skilled in the rudimentary techniques of excavation. In two short seasons, archaeology confirmed the presence of several Habitation foundations, the chimneys, gun platforms, and the well and courtyard.

However, even an uncritical review of these data suggest the features correlated more to the expectations of the heritage proponents than to actual *in situ* remains of Champlain’s Habitation. In short, the project officials were so confident of their interpretation of the 1605 site location, they assumed the features were evidence of the Habitation. Although incorrect, the 1938-39 archaeology remains a significant fact in the site’s importance.





Following a review of the Port Royal archaeological field data in 1967, Parks Canada Archaeologist John Rick noted,

As far as I have been able to determine, there is no full report on the excavations. We have the artifacts, some photographs, and some generally uninformed progress reports. In short, we have nothing which could be construed as an archaeological report ... My tentative conclusion is that Pinkney [the 1939-40 archaeologist] did not excavate the Habitation. ... I believe he assumed that he was digging on the correct site and simply interpreted everything ... as belonging to the Habitation (Rick 1970:13).

Since then, several small-scale archaeological tests and monitoring projects have occurred within the grounds of the Habitation. So far, no artifacts have been located from a 1605-13 context, nor have archaeologists identified structural or stratigraphic evidence of the original site. Former PCA archaeologist, Birgitta Wallace-Ferguson, noted in a carefully researched 1998 paper on the French habitations of 17th century Acadia that:

What was believed to be the Port-Royal site was excavated in 1938 by C. Coatsworth Pinkney, a landscape architect who had worked on the Colonial Williamsburg reconstruction. Evidence now at hand (1998) shows that the actual Port-Royal site was closer to the water, with most of it now gone. When the reconstruction was built in 1939, it was primarily based on Champlain's drawing, not on the excavation (Wallace-Ferguson 1998:17).

3

Clearly, Pinkney's 1938-39 excavation did not uncover the 1605 habitation. The stones, artifacts, and grades he interpreted as evidence of the habitation are the ubiquitous remains of 19th century land clearing and use. It is equally certain we cannot reassess Pinkney's conclusions through additional field work since our experience with subsequent tests and monitoring on the site indicates the original 1939 excavation, the reconstruction itself, and later repairs to the Habitation, have disturbed and or destroyed any archaeological contexts in which the features were originally found.

However, accepting the very low probability of discovering *in situ* 17th century contexts, there remains a high potential to discover Indigenous artifacts, even if they are displaced as a result of the extensive site disturbance. As shown in the 1994 Historic Sites and Monuments Board of Canada (HSMBC) report, **The Mi'kmaq and the French at Port Royal, 1605 - 1613** (Schmeisser 1994), there was extensive use and occupation of the area by Mi'kmaq dating back millennia. As we discovered at other sites (e.g. Fort Gaspareaux NHS), it is not uncommon to locate Indigenous artifacts from thousands of years ago in later archaeological contexts.





Archaeological Mitigation Recommendations

The proposed stabilization activities will occur in previously disturbed zones, in above ground locations, or in areas with little or no impact to below grade resources. The following mitigation measures are recommended:

- The accidental discovery of any archaeological feature or artifacts that are clearly earlier than the 1939 reconstruction must be collected, their location noted, and reported to the Project Manager immediately,
- The contractor should be encouraged to complete as much of the excavation work as possible in a short period of time to allow an archaeologist to monitor and assess a portion of the work in a short time frame. This is especially important for the palisade replacement trench and an archaeologist is required to monitor this activity in the event that the trenching uncovers Indigenous artifacts,
- The discovery of an undisturbed archaeological structure or context may require additional archaeological testing, and
- Any change to the existing plans or requirements to include digging in areas not included in this Archaeological Overview Assessment should be submitted to the CRIA coordinator as soon as possible.

Conclusion

This AOA is based on a review of the archaeological field data, reports, etc. related to the Port Royal Habitation NHS and filed in the Collections and Conservation Lab, Parks Canada, Dartmouth, Nova Scotia. In addition, the AOA is based on information provided by the Mainland Nova Scotia Field Unit and the following documents:

Heritage Character Statement, Port Royal Habitation (1994) Parks Canada Agency.

Commemorative Integrity Statement, Port Royal National Historic Site of Canada (1997) Parks Canada Agency.

Preliminary Building Condition and Issues Report: Habitation, Port Royal, Nova Scotia. Prepared by: Built Heritage Section, Cultural Heritage Policies Branch, Indigenous Affairs and Cultural Policies Directorate, Parks Canada. 2016

Burke, Charles A.

2005 "Champlain's Port Royal Habitation: Archaeology as Metaphor in the Site's Commemoration", Unpublished Paper Presented to The French Colonial Historical Society, Acadia University, Wolfville, Nova Scotia, June 4-7, 2005.





Rick, John

1970 "Archaeological Investigations of the National Historic Sites Service, 1962-66," Archaeology and History, No. 1, Parks Canada, Ottawa.

Schmeisser, Barbara

1994 "Port-Royal NHS: Confirmation and Clarification of National Historic Significance" and "The Mi'kmaq and the French at Port Royal, 1605 - 1613", HSMBC OB-4, Parks Canada, Ottawa.

Wallace-Ferguson, Birgitta

1998 "An Archaeologist Discovers Early Acadia" in Looking Into Acadie, Nova Scotia Museum Curatorial Report No. 87, Edited by Margaret Conrad, Halifax, Nova Scotia

FIGURES

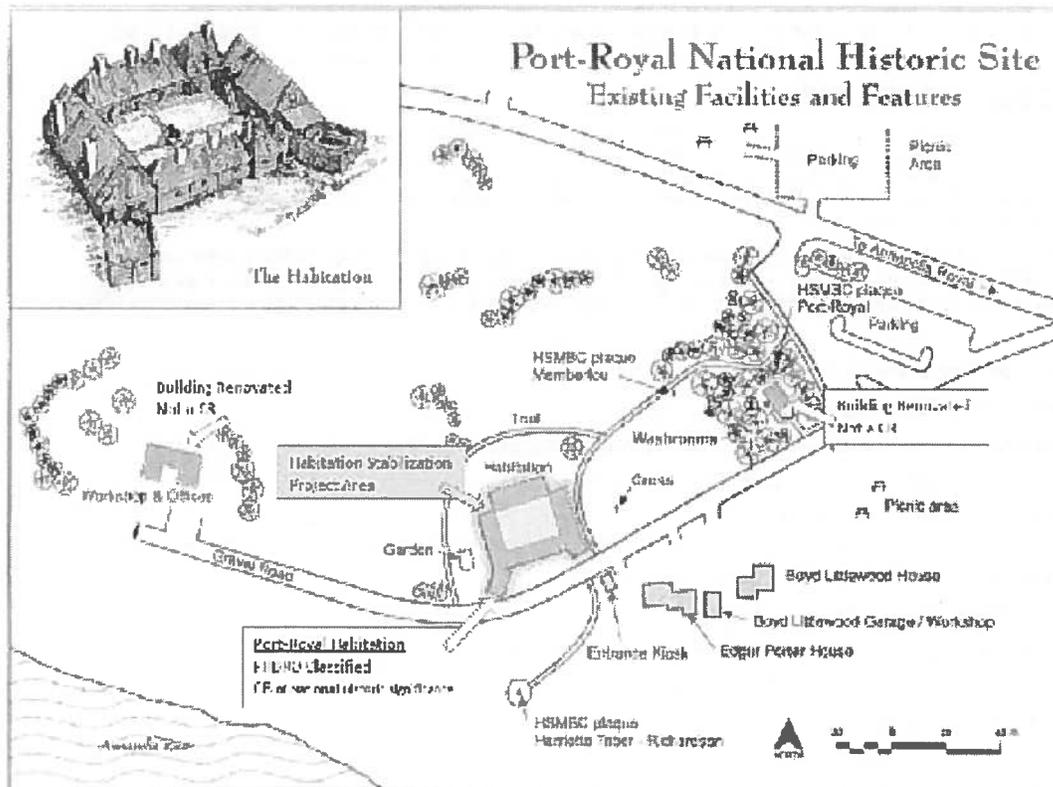


Figure 1: Site Plan of Proposed Work Port Royal Habitation.





FEDERAL HERITAGE BUILDINGS REVIEW OFFICE
Request for Review of Intervention

A. IDENTIFICATION

Building/Asset Name: Port-Royal Habitation

Street Address: 53 Historic Lane,

City, Province: Port Royal, Nova Scotia

B. PROJECT INFORMATION

Proposal/Project Title: Port-Royal NHS – Port-Royal Habitation stabilization

Is this a follow-up of a previous review? YES NO UNSURE

Design Stage: Pre-Design Schematic Design Dev. Const. Docs Tender Constructed

Percent complete of current stage: 33% 66% 99% 100%

Large, complex projects should be submitted as early as possible and again at strategic points throughout the project. For small, straightforward interventions, the 66% Design Development stage is ideal for review.

The project team has access to the relevant Heritage Character Statement as well as the Standards and Guidelines for Historic Places in Canada (www.historicplaces.ca). YES NO

C. CONTACT INFORMATION

The Custodian Proponent is the departmental representative officially making the submission on behalf of the custodian department. If the Custodian Proponent is not actively involved with the project delivery, a Project Contact may be identified to answer questions regarding the submission. The Project Contact may be any individual able to address specific questions regarding the submission, this includes consultants and Project Managers. Please identify no more than ONE project Contact

Final copies of the review are sent to the Custodian Proponent, applicable departmental FHBRO representative, and the NCA (for projects within the National Capital Area) If the Departmental FHBRO Representative would also like to be cc'd on all communication with the Custodian Proponent and/or Project Contact, check here:

Custodian Proponent: Jonathan Nash

Position/Title: Project Manager

Department/Organization: Parks Canada, Mainland Nova Scotia Field Unit

Tel.: 902-426-6139 **Cell:** 902-402-1743

E-mail: jonathan.nash@pc.gc.ca

Project Contact (if different from above): Keith Mercer

Position/Title: Cultural Resource Manager

Department/Organization: Parks Canada, Mainland Nova Scotia Field Unit

Tel.: 902-426-1992 **Cell:** 902-402-5360

E-mail: keith.mercer@pc.gc.ca





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D. PROPOSAL DOCUMENTATION

Include sufficient information to fully describe both the current condition where the work is to take place and what is being proposed. Provide all documentation electronically with hard copies of oversized documentation.

At a minimum, the submission must include:

- Photos of the Existing Condition where the work is to take place**
- Graphics illustrating the Proposal** (Drawings/cut sheets/renderings)
- A description of the work and reason for it** (see below, or attach a separate document)

Purpose of the Project:

Describe the reason for undertaking this work (for example to address a change in use or functional requirements, to address current codes or standards, or to address deterioration or a technical problem).

Port Royal NHS is located on the north shore of the Annapolis Basin opposite Goat Island. The site of the Port Royal Habitation was declared a national historic site in 1924. The Habitation was constructed in 1939-1940 as a replica of the original structures erected in 1605 by Sieurs de Mons and his group of French settlers. Based on a drawing in Samuel de Champlain's journal, the reconstruction was erected in what was believed to be the Habitation's original location, but archaeologists have since proven that this is not the 17th-century site. The reconstructed Habitation encompasses several buildings forming a quadrangle. The complex comprises a courtyard, well and gateway, forge, kitchen, bakery, community room, gun platform, cellar, artisans' quarters (upper and lower levels), chapel, gentlemen's quarters (i.e., priest's, Champdoré, Lescarbot, and Boulaye), the Governor's dwelling, storehouse and cellar, trading room, guard room and palisade.

Port Royal was designated as a national historic site because of its heritage and legacy - French culture, commerce and colonization, and the experiences of Mi'kmaq and French colonists, 1605 - 1613; and because the replica of the Habitation was a milestone in the Canadian heritage movement. Since 1939, its form and mass have contributed to the site's cultural landscape. Its existence and composition were also the result of an international cooperative effort that was unique in the preservation movement in Canada and a departure in interpreting the past for preservationists. The Habitation is a cultural resource of national historic significance and was designated as a «Classified» heritage building by FHBRO in 1993 because of its historical associations, its status as an architectural reconstruction, and its environmental significance.

The purpose of this FII project (RPA 738) is to conduct a complete assessment (completed in 2016 by Parks Canada Built Heritage team) and stabilization of the Habitation, particularly its walls, roofs, which have issues with rot. The Habitation was constructed in 1939-1940 and most of the exterior wood elements have started to deteriorate, or are now rotten. The roof membrane has reached the end of its life and needs to be replaced, as does some wood sheathing to prevent the structure from being further damaged by the elements. The primary treatment for the building is Preservation, with elements of Rehabilitation because repair or replacement of a significant number of deteriorated features will be necessary.

Scope of Work:

Provide a brief description of the project as a whole. In the case of follow-up reviews, this should include a response to the recommendations made in the previous review.

This project involves the complete stabilization of the Habitation's roofs, exterior walls (both inside and outside the fort) and chimneys. Minor excavation and re-grading will take place. All of this work has been guided by the 2016 HCCD assessment. Indeed, the project was re-assessed and financed in light of that study. This is a summary of the project by element.

Roofs The roofs on all of the Habitation's buildings will be removed and replaced to address ongoing water damage and protect the historic site for decades to come. During the removal of existing boards





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Request for Review of Intervention

and shingles, the contractor and project team will assess which boards can be saved and used again during re-installation of the new roof. Emphasis will be placed on salvaging as many boards as possible. Once stripped, the contractor will install a new rubber waterproof membrane. The existing membrane is at the end of life. New roof boards and shingles will be of the same cut and wood type as existing elements – for example, pine boards and oak shingles.

Exterior woodwork: The exterior walls of the entire Habitation, on both sides of the fort, will be removed and replaced with new walls. Current boards will be stripped and assessed. Those that can be salvaged – up to 30-40%, according to the 2016 HCCD assessment – will be re-installed together on the same stretch of wall to ensure that the wall's appearance is consistent and so the condition of these boards can be monitored moving forward. Typical for siding work, there is 300 lineal metres of random siding boards to be replaced on the whole Habitation. Work on the palisade will not occur until 2018. The timbers will be hand-adzed to stay true to the traditional skills used in this character-defining element. Option 1 in the tender drawings will be employed. The cannon platform's walls, platform and framing will be removed and replaced to replicate the existing structure in its appearance, form and materials. It's difficult to tell how much of the structure will need to be replaced, and how much can be re-used, until the contractor starts to actually dismantle each element. It's possible that this work will involve minor regarding to improve drainage around the structure. See attached AOA.

Chimneys: – All of the Habitation's stone chimneys will be repointed, their flashing replaced, and the cap stones repaired or replaced to appear exactly as they do now. The cap stones are cracked, allowing water to infiltrate the chimneys and buildings. The contractor and project team is considering the possibility of adding some kind of waterproofing membrane, either underneath the cap stones once removed, or perhaps on top of the cap stones afterwards. This is still very much up in the air. We would appreciate FHBRO's advice on this particular issue.

Out buildings of the Habitation: There will be selective replacement of damaged wood elements within the Habitation's walls. First, the wooden staircase will be removed and examined. Existing boards will be re-used, but it's anticipated that many new ones will be needed as well – as always, replicating the existing wood types, forms and physical appearance of the existing structure. Second, the shingled roof of the well in the courtyard will be replaced. It's possible that the well's stone masonry will be repointed, but it currently looks to be in good, stable condition.

Heritage Conservation Approach:

Please describe the impact of the proposed work on any Character Defining Elements and any mitigating measures being considered.

The heritage conservation approach for this project has been guided by the *Standards and Guidelines for the Conservation of Historic Places in Canada*, Parks Canada's CRM Policy, Port-Royal NHS Commemorative Integrity Statement, HCCD Preliminary Building Condition and Issues Report and the relevant FHBRO Building Report and Heritage Character Statement.

The heritage character of the Habitation resides in its distinctive form and massing, its materials and finishes, and the relationship of the entire ensemble to the natural setting. The Habitation is a picturesque group of six buildings, each with steeply pitched roofs and tall chimneys, and linked together to form a quadrangle. The buildings were constructed using traditional construction methods and native materials including fieldstone, hewn timbers and brick. The stone elements – chimneys, well and pathway – juxtaposed with the weathered patina of the wood, is a character defining feature which must be maintained. Whenever possible the traditional skills, materials and methods of construction evident in the reconstruction will be utilized when repairs are required. The arrangement of the buildings and the placement of openings are integral to the historic effect and should be maintained as constructed, without alterations or additions.





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Additional Comments:

See the attached supporting documents:

1. Port-Royal NHS Commemorative Integrity Statement
2. FHBRO Heritage Character Statement
3. FHBRO Building Report 92-85
4. HCCD, Built Heritage Section, Preliminary Building Condition and Issues Report – July 2016
5. Renewal Project Port-Royal Habitation NHS - Drawings 66% review (January 2017)
6. 66% Specifications Issued for Tender – Habitation Upgrades Port Royal (May 2017)
7. Images at the end of this RRI
8. AOA 2017 Port Royal NHS FII 738 (Charles Burke, May 2017)



Port-Royal NHS – Port-Royal Habitation. *Photo: Chris Reardon*



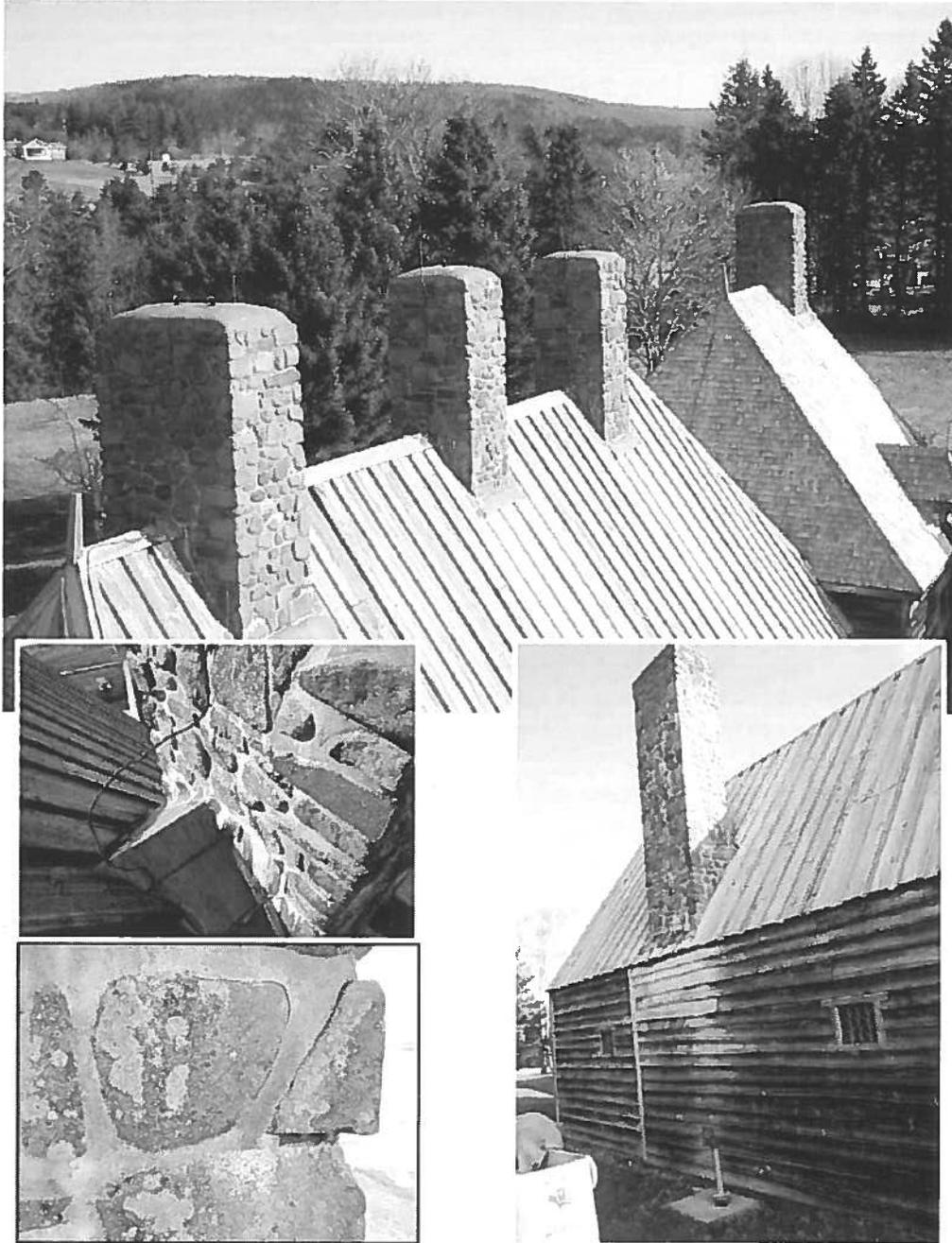
Port-Royal NHS – West Elevation of the Courtyard at the Habitation





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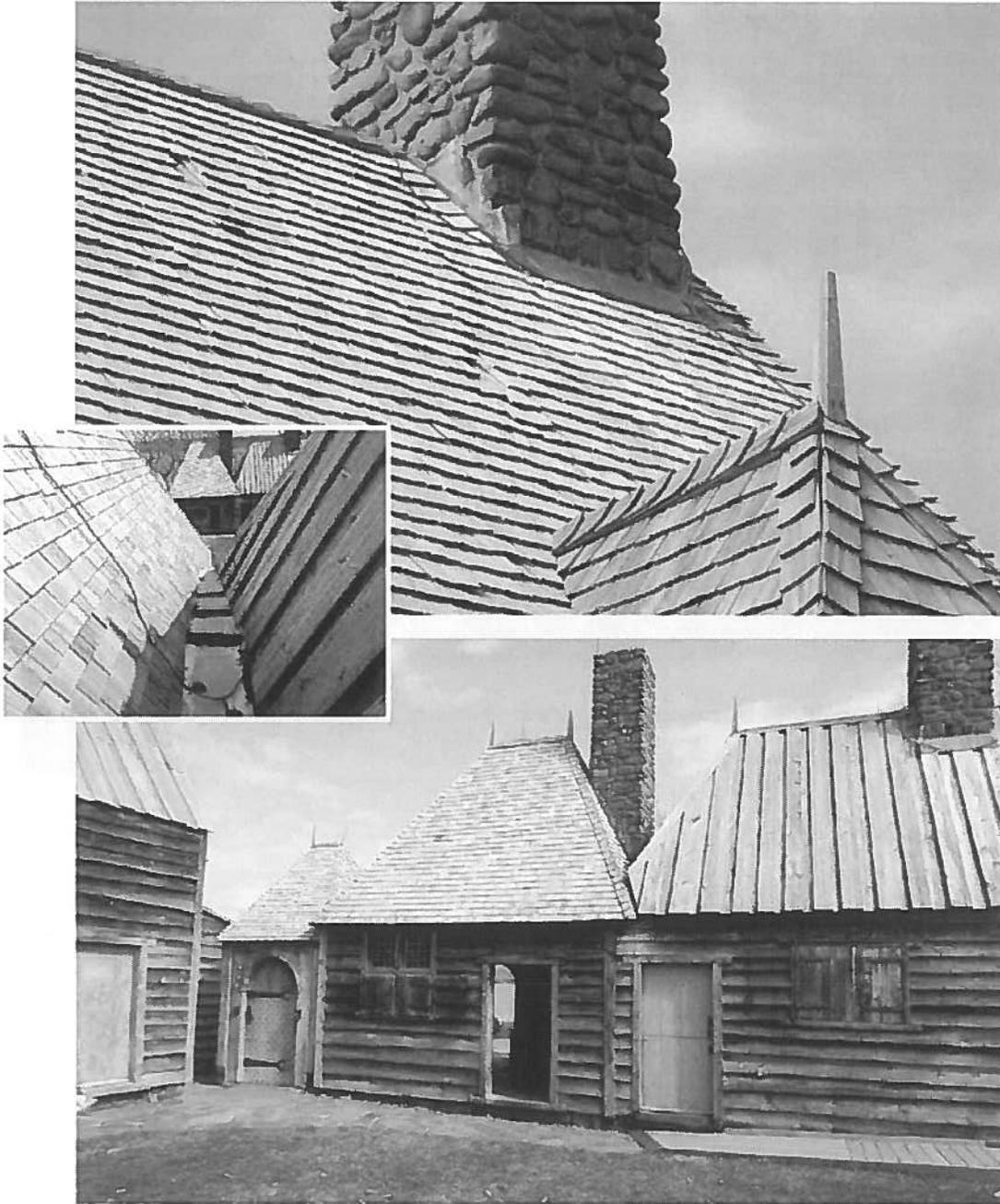
Chimneys [Parks Canada 2016]





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Roofs (Parks Canada 2016)

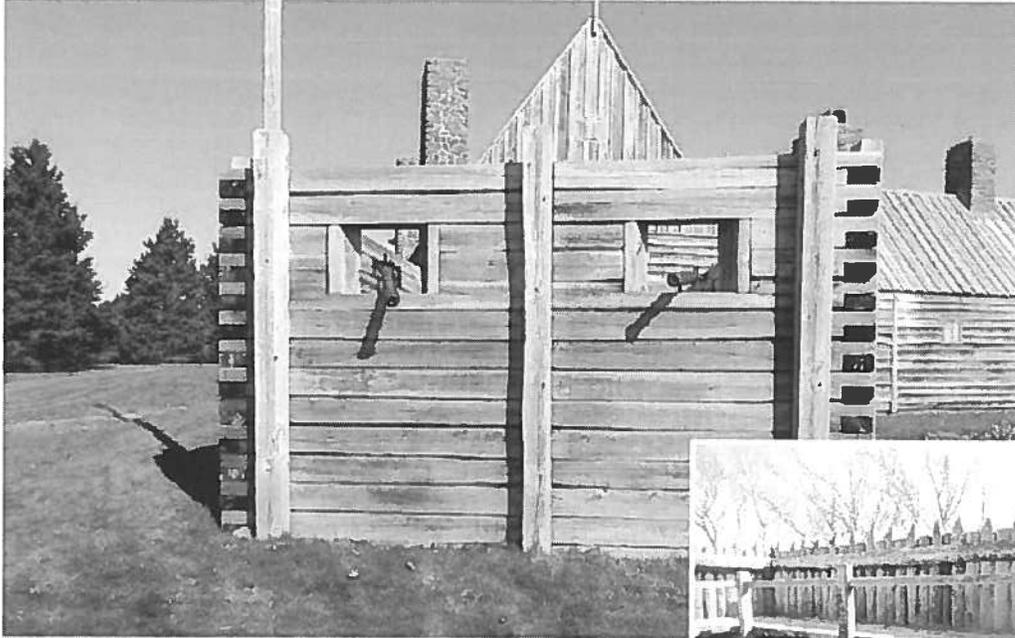




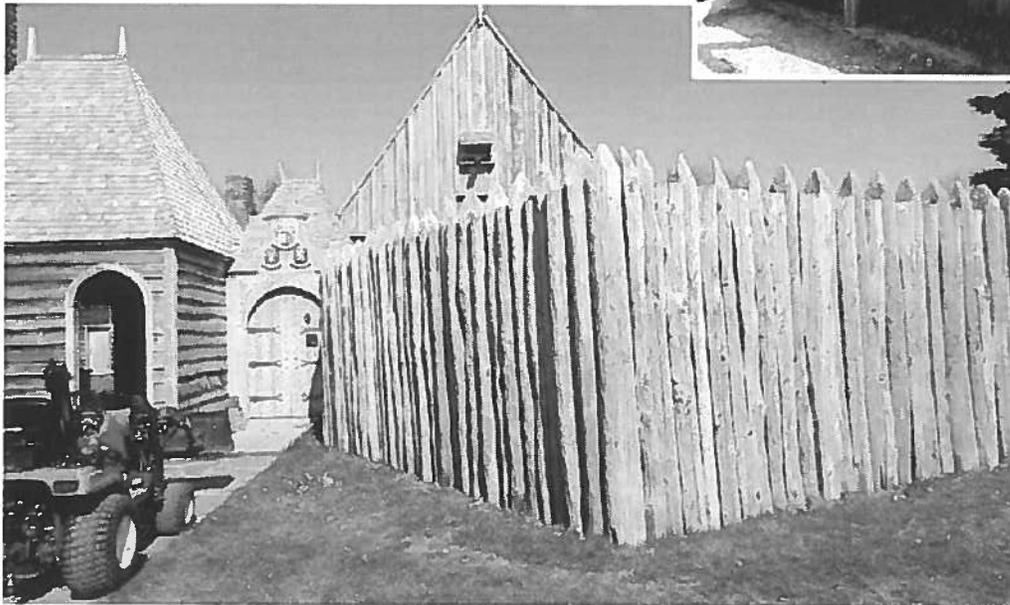
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Exterior Woodwork [Parks Canada 2016]

Canon Platform



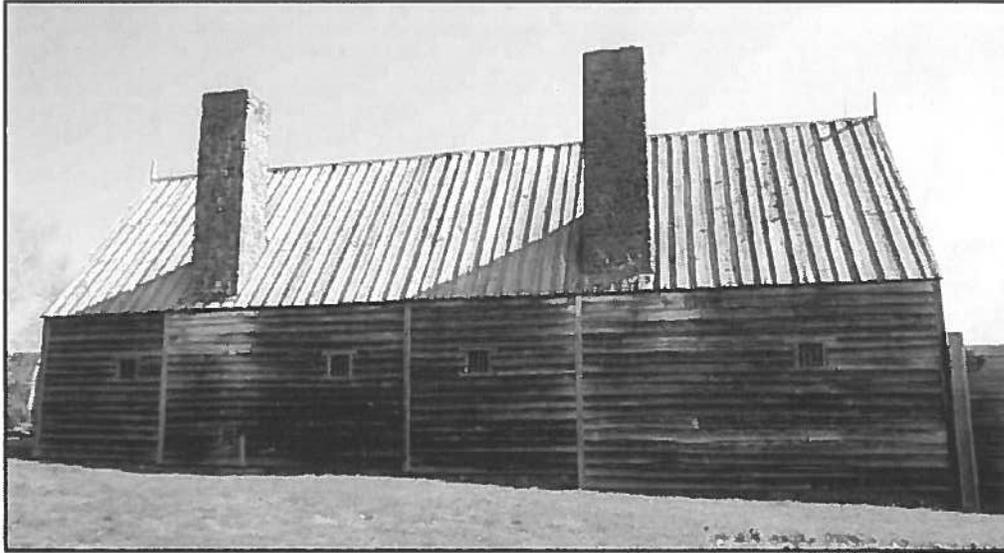
Palisade





FHBRO Request for Review of Intervention

Walls





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Out buildings [Parks Canada 2016]

Well

