

Project Number: 5P468-21-0054

Lower Fort Garry National Historic Site,
5925 Highway 9, St. Andrews, Manitoba

Rehabilitation from Water Damage – Lower
Fort Garry National Historic Site

Electrical Tender Ready Resubmission
Specifications

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Part 1 General

1.1 Electrical Engineer

.1

.1

.2

Part 2 Products

2.1 Not used

.1 Not Used

Part 3 Execution

3.1 Not used

.1 Not Used

End of Section

Part 1 General

1.1 List of Drawings

- .1 Drawings Included
 - .1 Index
 - Demolition
 - D1.1 BIG HOUSE LIGHTING DEMOLITION PLAN - BASEMENT FLOOR
 - D1.2 BIG HOUSE LIGHTING DEMOLITION PLAN - MAIN FLOOR
 - D1.3 BIG HOUSE LIGHTING DEMOLITION PLAN - ATTIC LEVEL
 - D2.1 BIG HOUSE HEATING DEMOLITION PLAN - BASEMENT FLOOR
 - D2.2 BIG HOUSE HEATING DEMOLITION PLAN - MAIN FLOOR
 - Electrical
 - E1.1 BIG HOUSE LIGHTING PLAN - BASEMENT FLOOR
 - E1.2 BIG HOUSE LIGHTING PLAN - MAIN FLOOR
 - E1.3 BIG HOUSE LIGHTING PLAN - ATTIC LEVEL
 - E2.1 BIG HOUSE HEATING PLAN - BASEMENT FLOOR
 - E2.2 BIG HOUSE HEATING PLAN - MAIN FLOOR
 - E3 ELECTRICAL PANELS & DISTRIBUTION

Part 2 Products

2.1 Not used

- .1 Not Used

Part 3 Execution

3.1 Not used

- .1 Not Used

End of Section

Part 1 General

1.1 Work covered by contract documents

- .1 Work of this Contract comprises restoration work in the “Big House” within Lower fort Garry National Historic Site, located at 5925 Highway 9, St. Andrews, Manitoba. For the purpose of this contract the owner will be represented by the Project Manager appointed by Parks Canada who will fulfill the role defined for the Departmental Representative in these specifications.
- .2 Work under this Contract covers supply of all labour, materials, and equipment required to carry out Inspection, Testing Maintenance activities of the electrical infrastructure and Construction in accordance with the contract documents. Work includes but is not limited to:
 - .1 Selective demolition of existing construction as shown on Drawings.
 - .2 Install new radiant heat ceiling panels, connect to existing system when necessary, and install new breakers as per plan. Parks Canada to provide radiant heat ceiling panels.
 - .3 Install new wall fan heaters, thermostats and wiring as per plans.
 - .4 Partial replacement of the lighting system in the Big House, including on site mock-up lighting installation for a full performance verification and testing.
 - .5 Check condition and function of dimmers and drivers as per plan. Disconnect, remove and replace damaged dimmers and drivers.
 - .6 Check condition of existing wiring to light fixtures and electrical devices, re-use existing wiring wherever possible.
 - .7 Work also includes start-up, commissioning, and training of all systems installed.
- .3 Contractor is to provide O&M documentation throughout the project. Documentation includes Test-Sheets, field-notes, reports, shop-drawings and photographs. Documents will be reviewed throughout the project and will be part of the meeting agenda at construction meetings. Contractor to update the manual periodically and submit for review. Contractor must submit two final copies of the O&M documentation. Contractor must submit two final copies of the Test-Sheets.
- .4 At the completion of the inspection and testing works, the Contractor is to provide one electronic copy of the report, complete with all Test-Sheets with test data and recordings, and summary of recommendations.
- .5 Contractor to review the accuracy of the single-line-diagram throughout the project duration. All ratings and settings will be recorded in the corresponding Report or Test-Sheets. Any deviations from the single-line-diagram must be recorded. At the completion of the inspection and testing works, the Contractor is to provide one (1) scanned copy of the mark-ups to the single-line-diagram. The mark-ups will be reviewed and As-Built drawings will be generated by the Consultant.
- .6 Any property or features damaged during the demolition must be replaced or repaired to its original state.
- .7 Remove any waste material off site and dispose of properly.
- .8 All materials and workmanship must be as per stamped plans and specifications.

1.2 Contract method

- .1 Refer to contract General Conditions provided by Departmental Representative.

1.3 Work by others

- .1 Co-operate with other Contractors in carrying out their respective works and carry out instructions from Departmental Representative.
- .2 Co-ordinate work with that of other Contractors. If any part of work under this Contract depends for its proper execution or result upon work of another Contractor, report promptly to Departmental Representative, in writing, any defects which may interfere with proper execution of Work.

1.4 Work sequence

- .1 Construct Work in stages to accommodate Owner's continued use of premises during construction.
- .2 Co-ordinate Progress Schedule and co-ordinate with Departmental Representative during construction.
- .3 Construct Work in stages to provide for continuous public usage. Do not close off public usage of facilities until use of one stage of Work will provide alternate usage.
- .4 Maintain fire access/control.

1.5 Historical Features, Previous Uses, Heritage Value and Character Defining Elements

- .1 Lower Fort Garry National Historic Site is a former Hudson's Bay Company trading post and trans-shipment centre located next to the Red River near the town of Selkirk, MB. It was designated a National Historic site in 1950 for its significances as the place where Treaty Number 1 was made between the Ojibway and Swampy Cree of Manitoba and the Crown, for its assemblage of fur trade structures which represent a significant example of early stone architecture and for the role the fort played as a supply centre for the fur trade of Western Canada.
- .2 The Fort has six federally designated heritage buildings by the Federal Heritage Building Review Office (FHBRO). The Big House is designated as a "classified" heritage property, the highest level of designation reserved for the best examples of federal built heritage. Reasons for the Big House designation:
 - .1 The Big House was constructed in 1830-32 as a residence and administrative office for the Hudson's Bay Company. The construction was overseen by Pierre Leblanc
 - .2 The Big House was designated by FRBRO as Classified because of its historical associations, its environmental and local importance within Lower Fort Garry, and its architectural significance.
 - .3 Lower Fort Garry was an administrative headquarters for fur trading and the focal point of the lower Red River settlement as well as an important link to Britain. The construction of the Big House reflects the consolidation of the fur trade under the Hudson Bay Company and the development of the fort as a trans-shipment depot and agricultural supply center.
 - .4 The Big House is associated with George Simpson, Governor of the Hudson Bay Northern department's fur trade. He initiated the construction of the fort and the residence and office as a center from which to manage the fur trade. The house is also associated with the Northwest Mounted Police, whose initial headquarters were located at the fort.
 - .5 The Big House is a very good example of a residence and administrative building designed in the British Classical tradition. The "L"-shaped structure was

built in two visually distinct stages, each with a dominant hip roof and domestically scaled symmetrical facades. The annex was constructed using colomage pierroté as the structural system. Extensively altered over the years, restoration to the 1850-52 period involved replacement of much of the remaining original fabric of the building.

- .6 The Big House is part of the historic enclave defined by the perimeter walls of the fort within which all the buildings have a cohesive design and visual unity. The central location of the Big House has ensured its prominence over the years.

1.6 Heritage Conservation Minimal Intervention Approach

- .1 Considerations of conservation are guided by a minimal intervention approach and advocate the maintenance and repair of elements instead of their replacement. Twelve specific standards will be followed as outlined in the Standards and Guidelines for the Conservation of Historic Places in Canada:
 - .1 Standard No. 1 - Conserve the heritage value of a historic place. Do not remove, replace, or substantially alter its intact or repairable character-defining elements. Do not move a part of a historic place if its current location is a character-defining element.
 - .2 Standard No. 2 - Conserve changes to a historic place which, over time, have become character-defining elements in their own right.
 - .3 Standard No. 3 - Conserve heritage value by adopting an approach calling for minimal intervention.
 - .4 Standard No. 6 - Protect and, if necessary, stabilize a historic place until any subsequent intervention is undertaken. Protect and preserve archaeological resources in place. Where there is potential for disturbance of archaeological resources, take mitigation measures to limit damage and loss of information.
 - .5 Standard No. 7 - Evaluate the existing condition of character-defining elements to determine the appropriate intervention needed. Use the gentlest means possible for any intervention. Respect heritage value when undertaking an intervention.
 - .6 Standard No. 8 - Maintain character-defining elements on an ongoing basis. Repair character-defining elements by reinforcing their materials using recognized conservation methods. Replace in kind any extensively deteriorated or missing parts of character-defining elements, where there are surviving prototypes.
 - .7 Standard No. 9 - Make any intervention needed to preserve character-defining elements physically and visually compatible with the historic place, and identifiable upon close inspection. Document any intervention for future reference.
 - .8 Standard No. 10 - Repair rather than replace character-defining elements. Where character-defining elements are too severely deteriorated to repair, and where sufficient physical evidence exists, replace them with new elements that match the forms, materials and detailing of sound versions of the same elements. Where there is insufficient physical evidence, make the form, material and detailing of the new elements compatible with the character of the historic place.
 - .9 Standard No. 11 - Conserve the heritage value and character-defining elements when creating any new additions to a historic place or any related new construction^[1]. Make the new work physically and visually compatible with,

subordinate to and distinguishable from the historic place. I think we should just be consistent and include them all as we have in the other packages.

- .10 Standard No. 12 - Create any new additions or related new construction so that the essential form and integrity of a historic place will not be impaired if the new work is removed in the future.
- .11 Standard No. 13 - Repair rather than replace character-defining elements from the restoration period. Where character-defining elements are too severely deteriorated to repair and where sufficient physical evidence exists, replace them with new elements that match the forms, materials and detailing of sound versions of the same elements.
- .12 Standard No. 14 - Replace missing features from the restoration period with new features whose forms, materials and detailing are based on sufficient physical, documentary and/or oral evidence.

1.7 Contractor use of premises

- .1 The entire site is a heritage and archaeologically sensitive zone. Refer to Section 01 14 00 - Work Restrictions for access and egress requirements. Coordinate laydown, parking and other areas shown in C1, as required with the Departmental Representative.
- .2 Co-ordinate use of premises under direction of Departmental Representative .
- .3 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.
- .4 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
- .5 Prevent migration of dust and debris to non-designated work areas.
- .6 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 and Consultant.
- .7 At completion of operations condition of existing work: equal to or better than that which existed before new work started.

1.8 Parks Canada occupancy

- .1 Parks Canada will occupy premises during entire construction period for execution of normal operations.
- .2 Co-operate with Parks Canada in scheduling operations to minimize conflict and to facilitate Owner usage.
- .3 The site is open to the general public for the duration of the project.

1.9 Alterations, additions or repairs to existing building

- .1 Execute work with least possible interference or disturbance to building operations, public and normal use of premises. Arrange with Departmental Representative to facilitate execution of work.
- .2 Notify Departmental Representative if relocation or installation of new material requires building operations or penetrations not indicated on contract drawings.
- .3 Restrict construction activities to designated work areas. Do not store materials, tools or equipment outside of designated work areas. Where Work must proceed outside of designated areas, arrange scheduling with Departmental Representative before start of such work.

- .4 Use only designated entrances, and corridors for access to work areas, delivery of materials and equipment, and removal of construction debris. Do not block exits.

1.10 Documents required

- .1 Maintain at job site, one copy each document as follows:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Reviewed Shop Drawings.
 - .5 List of Outstanding Shop Drawings.
 - .6 Change Orders.
 - .7 Other Modifications to Contract.
 - .8 Field Test Reports.
 - .9 Copy of Approved Work Schedule.
 - .10 Health and Safety Plan and Other Safety Related Documents.
 - .11 Fire Safety Plan and Emergency Procedures (ex: emergency evacuation procedures, fire watch procedures, system impairment procedures, etc.).
 - .12 Other documents as specified.

1.11 Request for information

- .1 Maintain a Request for Information (RFI) system for questions regarding clarifications. A RFI must be a written document submitted in electronic form which as a minimum includes the following details:
 - .1 Date.
 - .2 Project name and number.
 - .3 Contractor's contact information.
 - .4 Reference to the drawings and/or specifications (when applicable).
 - .5 Location of the work in question.
 - .6 A complete description of the question.
 - .7 Affects this item will have on other work.
 - .8 Affects this item will have on the cost of the project.
 - .9 Affects this item will have on the construction schedule.
 - .10 Suggested solution to resolve the question(s).
 - .11 Date that the response to the RFI is required by.
 - .12 An area for a response to the RFI to be provided.
- .2 A RFI form is to be prepared with headings and spaces for the above mentioned information to be filled into. Hand-written RFIs will not be accepted.
- .3 The Contractor is to allow a minimum of 3 days for the Departmental Representative to provide a response.
- .4 The Departmental Representative's response does not authorize changes to the contract scope, price, or schedule.
- .5 RFIs are intended for clarification of site conditions, drawings, or specifications. RFIs shall not be used by the Contractor to identify potential errors or omissions in the

Contract Documents. In the case of potential errors or omissions in the Contract Documents, communicate directly with the Departmental Representative for clarifications.

Part 2 Products

2.1 Not used

.1 Not used.

Part 3 Execution

3.1 Not used

.1 Not used.

End of Section

Part 1 General

1.1 Access and egress

- .1 Design, construct and maintain temporary "access to" and "egress from" work areas, including stairs, runways, ramps or ladders and scaffolding, independent of finished surfaces and in accordance with relevant municipal, provincial and other regulations.
- .2 Establish access routes to and from the work areas. Use only designated access routes for movement of workers, tools, equipment, materials, and construction debris.
- .3 Maintain existing roads and walkways.
- .4 Maintain safe access and egress at all building doors. Provide access and egress hoarding in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

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 Maintain existing services to building and provide for personnel and vehicle access.
- .3 Where security is reduced by work provide temporary means to maintain security.
- .4 Contractor to provide sanitary facilities for use by Contractor's personnel in their laydown area. Facilities are to be kept clean.
- .5 Closures: protect work temporarily until permanent enclosures are completed.
- .6 Contractor laydown area as per drawing C1 site plan. Protect laydown areas with adequate ground protection.

1.3 Historical Objects and Furnishings

- .1 The building contains furnishings and historical objects. Protect furnishings and objects remaining in work areas and adjacent spaces from dust and debris in accordance with requirements of Section 01 56 00 - Temporary Barriers and Enclosures
- .2 If furnishings or objects are obstructing the work areas:
 - .1 Cease Work in affected area immediately
 - .2 Do not move or handle historic objects or furnishings
 - .3 Immediately notify Departmental Representative, and wait for instructions.
 - .4 Protect objects or furnishings from damage
 - .5 Resume activity when permitted to proceed with Departmental Representative authorization.

1.4 Alterations, additions or repairs to existing building

- .1 Execute work with least possible interference or disturbance to building operations and normal use of premises. Arrange with Departmental Representative to facilitate execution of work.
- .2 Notify Departmental Representative if relocation or installation of new material requires building operations or penetrations not indicated on contract drawings.
- .3 Restrict construction activities to designated work areas. Do not store materials, tools or equipment outside of designated work areas. Where Work must proceed outside of designated areas, arrange scheduling with Departmental Representative before start of such work.

- .4 Use only designated entrances, and corridors for access to work areas, delivery of materials and equipment, and removal of construction debris. Do not block exits.
- .5 Work is to follow the guidance of Standards and Guidelines for the Conservation of Historic Places in Canada as found in Section 01 11 00 - Summary of Work.

1.5 Existing services

- .1 Notify, Departmental Representative and utility companies of intended interruption of services and obtain required permission.
- .2 Submit schedule to and obtain approval from Departmental Representative and Consultant for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties. Keep duration of interruptions minimum. Carry out interruptions after normal working hours of occupants, preferably on weekends.
- .3 Where unknown services are encountered, immediately advise Consultant and Departmental Representative, confirm findings in writing.
- .4 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.
- .5 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

1.6 Special requirements

- .1 Space Heating
 - .1 Big House
 - .1 Contractor is required to maintain air temperature at or above 13 degrees C in flood affected areas until 30 days after completion of the repairs to facilitate sprinkler repairs, and allow any areas where plastering or painting has occurred to properly dry and cure and to protect artifacts housed in this building. This includes attic spaces, main floor rooms 11, 12, 13, 14 and basement rooms B-3 B-4. Parks Canada is responsible to maintain heat in the remainder of the building for the duration of the contract.
 - .2 Furloft and Men's House
 - .1 Contractor is required to maintain 10 degrees C until the completion, testing and commissioning including a full trip test of the sprinkler systems in these buildings to facilitate sprinkler repairs and acceptance.
 - .3 Parks Canada will install dataloggers to monitor these requirements in each building.

1.7 Security

- .1 Where security has been reduced by Work of Contract, provide temporary means to maintain security.

1.8 Building smoking environment

- .1 Comply with smoking restrictions. Smoking is not permitted within the fort walls or on historic grounds.
- .2 Smoking is only permitted in Contractor vehicles and in the Contractor Laydown area shown on drawing sheet C1. Use receptacles for product disposal.

- .3 Contractor shall provide receptacles for product disposal.

Part 2 Products - Not Used

Part 3 Execution - Not Used

End of Section

Part 1 General

1.1 Administrative

- .1 Schedule and administer project meetings throughout the progress of the work
- .2 Prepare agenda for meetings.
- .3 Distribute written notice of each meeting two days in advance of meeting date to Departmental Representative.
- .4 Provide physical space and make arrangements for meetings.
- .5 Preside at meetings.
- .6 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.
- .7 Representative of Contractor, Subcontractor and Suppliers attending meetings will be qualified and authorized to act on behalf of the party each represents.

1.2 Preconstruction meeting

- .1 Within 15 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
- .2 Departmental Representative, Contractor, major Subcontractors, field inspectors and supervisors will be in attendance.
- .3 Departmental Representative will establish time and location of meeting and notify parties concerned minimum five Working Days before meeting.
- .4 Departmental Representative will chair Start-Up Meeting, record minutes, and distribute minutes to all attending parties within four Working Days of meeting.
- .5 Agenda to include:
 - .1 Appointment of official representative of participants in the Work.
 - .2 Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
 - .3 Critical work sequencing and long-lead items.
 - .4 Lines of communications.
 - .5 Procedure for RFIs.
 - .6 Schedule of Work, progress scheduling.
 - .7 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities.
 - .8 Safety, OHS, and COVID protocols as applicable while on site.
 - .9 Site security
 - .10 Fire safety planning and System impairment planning.
 - .11 Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.
 - .12 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
 - .13 Departmental Representative provided products.
 - .14 Record drawings in accordance with Section 01 33 00 - Submittal Procedures.

- .15 Maintenance manuals in accordance with Section 01 78 00 - Closeout Submittals.
- .16 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.
- .17 Monthly progress claims, administrative procedures, photographs, hold backs.
- .18 Appointment of inspection and testing agencies or firms.
- .19 Access and use of site and existing buildings.
- .20 Environmental protection
- .21 Commissioning.
- .22 Mid construction reviews and Final acceptance inspections.
- .23 Insurances, transcript of policies.
- .6 Submit Construction Progress Schedule and Shop Drawing Submittal Schedule at initial start-up meeting.

1.3 Progress meetings

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

Part 2 Products - Not Used

Part 3 Execution - Not Used

End of Section

Part 1 General

1.1 Definitions

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

1.2 Requirements

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

1.3 Action and informational submittals

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to 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 Project schedule

- .1 Develop detailed Project Schedule derived from Master Plan.

1.5 Project schedule reporting

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

1.6 Project meetings

- .1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.
- .2 Weather related delays with their remedial measures will be discussed and negotiated.

Part 2 Products - Not Used

Part 3 Execution - Not Used

End of Section

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 Do not proceed with Work affected by submittal until review is complete.
- .3 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .4 Where items or information is not produced in SI Metric units converted values are acceptable.
- .5 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .6 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .7 Verify field measurements and affected adjacent Work are coordinated.
- .8 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative review of submittals.
- .9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.
- .10 Keep one reviewed copy of each submission on site.

1.2 Shop drawings and product data

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 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.
- .3 Allow 3 days for Departmental Representative to review submission.
- .4 Adjustments made on shop drawings 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.
- .5 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
- .6 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.
- .7 Submissions include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .5 Details of appropriate portions of Work as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
 - .3 Setting or erection details.
 - .4 Capacities.
 - .5 Performance characteristics.
 - .6 Standards.
 - .7 Operating weight.
 - .8 Relationship to adjacent work.
- .8 After Departmental Representative review, distribute copies.
- .9 Submit electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.
- .10 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.
- .11 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 or system to be provided has been tested in accord with specified requirements.
 - .2 Testing must have been within 3 years of date of contract award for project.
- .12 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 must be dated after award of project contract complete with project name.
- .13 Submit electronic copies of manufacturers instructions for requirements requested in specification Sections and as requested by Departmental Representative.

- .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.
- .14 Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.
- .15 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .16 Submit electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.
- .17 Delete information not applicable to project.
- .18 Supplement standard information to provide details applicable to project.
- .19 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- .20 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.

1.3 Substitution Procedures

- .1 Substitution Requests: Submit electronic copy of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - .1 Departmental Representative's Action: If necessary, Departmental Representative will request additional information or documentation for evaluation within five Working Days of receipt of a request for substitution. Departmental Representative will notify Contractor of acceptance or rejection of proposed substitution within 10 Working Days of receipt of request, or five Working Days of receipt of additional information or documentation, whichever is later.
 - .1 Forms of Acceptance: Change Order, Change Directive, or Supplemental Instructions for minor changes in the Work.
 - .2 Use product specified if Departmental Representative does not issue a decision on use of a proposed substitution within time allocated.
- .2 Quality Assurance
 - .1 Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.
- .3 Procedures
 - .1 Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

1.4 Photographic Documentation

- .1 Intent
 - .1 Provide digital photographs of buildings, grounds, and site features to record existing conditions prior to, during, and at completion of Work
 - .2 Use digital camera with capability of producing digital images at minimum 12 megapixels, uncompressed, saved in *.jpeg format
 - .3 Name photos identifying building name and photo location.
- .2 General
 - .1 Keep complete collection of photographs on site.
 - .2 Submit photographs to Departmental Representative on USB memory stick, or email as a WinZip file.
 - .3 Format:
 - .1 Colour digital photos, fine resolution of minimum 12 megapixels
 - .2 RAW format for pre-construction, and post-construction.
 - .3 PDF and JPEG format for construction progress photographs.
 - .4 Photograph Quality
 - .1 Well-illuminated, proper exposure
 - .2 Clarity: Sufficiently clear to distinguish differences in the pre-construction and post-construction photographs, and allow future reinstallation of restored items in the original locations
 - .5 Indicate project name and number, and date photograph was taken on each photograph
 - .6 Provide key plan and elevation drawings identifying location of photographs.
 - .7 Viewpoints: interior and exterior viewpoints, including close ups of specific details in locations as determined by the Departmental Representative, and as indicated
 - .1 Clearly establish viewpoints and identify them by numbering them with the same first number for the same viewpoint followed by a second number for each stage of work.
 - .2 Example: 1.0 - pre, 1.1 - demo, 1.2 - resto, 1.3 - reins, 1.4 - comp.
- .3 Pre-Construction Photographs
 - .1 Submit a complete photographic record of the condition of the existing building fabric (all materials and components) before start of Work
 - .2 Do not start work in the location until the photographic record has been reviewed by the Departmental Representative
 - .3 Number of images per set: as required to document each building, site feature, and area of Work.
 - .4 Number of sets: One set per building, site feature, or area of Work.
- .4 Construction Progress Photographs
 - .1 Provide photographs to record progress of the Work

- .2 Number of images per set: as required to document each building, site feature, and area of Work.
- .3 Number of sets: One set per building, site feature, or area of Work
- .4 Frequency: Submit updated images monthly with progress statement, except submit more frequently as directed by Departmental Representative for individual sets.
- .5 Final Photographs
 - .1 Provide photographs at completion of Work to record condition of site features, surrounding buildings, and new construction.
 - .2 Number of images per set: as required to document each building, site feature, and area of Work.

Part 2 Products

2.1 Substitution Products

- .1 Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 10 Working Days prior to time required for preparation and review of related submittals.
- .2 Substitutions for Convenience: Not allowed during construction
- .3 A request for substitution constitutes a representation that the Contractor:
 - .1 Has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product, is consistent with the Contract Documents and will produce indicated results, will not adversely affect the construction schedule, is compatible with other portions of the Work, and has received necessary approvals of the authorities having jurisdiction.
 - .2 Will provide the same or better warranty for the Substitution as for the specified Product.
 - .3 Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Departmental Representative
 - .4 Waives claims for additional costs or time extension which may subsequently become apparent.
 - .5 Will reimburse Departmental Representative for review or redesign services associated with re-approval by authorities.

Part 3 Execution - Not Used

End of Section

Part 1 General

1.1 Reference standards

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
- .2 National Fire Code of Canada-2015,
 - .1 Section 5.6. Construction and Demolition Sites
- .3 National Building Code of Canada -2015
 - .1 Part 8 Safety Measures at Construction and Demolition Sites
- .4 Province of Manitoba
 - .1 The Workers Compensation Act RSM 1987 - Updated 2013.

1.2 Action and informational submittals

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
 - .1 Results of site specific safety hazard and COVID-19 assessment.
 - .2 Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.
 - .3 Submit any COVID-19 documents as provincially and/or federally required.
- .3 Submit 1 copy of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative.
- .4 Submit copies of incident and accident reports.
- .5 Submit WHMIS Safety Data Sheets (SDS).
- .6 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 5 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within 5 days after receipt of comments from Departmental Representative.
- .7 Departmental Representative review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .8 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

1.3 Safety assessment

- .1 Perform site specific safety hazard assessment related to project before commencing in a task.

1.4 Meetings

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

1.5 Regulatory requirements

- .1 Do Work in accordance with Section 01 41 00 - Regulatory Requirements.

1.6 General requirements

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

1.7 Responsibility

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.
- .3 Be responsible for ensuring the grounds, air, trees and water are not damaged by Work the Contractor undertakes. If any spills, leaks or environmental contamination occurs. It is the Contractor's responsibility to clean up according to federal, provincial and territorial standards. All costs due to direct or indirect impact on the site are the contractor's sole responsibility; Park Canada reserves the right to review the full scope of site restoration.

1.8 Compliance requirements

- .1 Comply with the Occupational Health and Safety Acts and Regulations of the Province Having Jurisdiction
- .2 Comply with Occupational Health and Safety Regulations, 2022.
- .3 Comply with Construction and Demolition Sites and all requirement within for fire safety on site and for the protection of occupants as per National Fire Code of Canada, Section 5.6-2015
- .4 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

1.9 Unforeseen hazards

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

1.10 Health and safety coordinator

- .1 Employ and assign to Work, competent and authorized representative as Health and Safety Coordinator. Health and Safety Coordinator must:
 - .1 Have working knowledge of occupational safety and health regulations.
 - .2 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.

- .3 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
- .4 Be on site during execution of Work and report directly to the Departmental Representative.

1.11 Correction of non-compliance

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

1.12 Work stoppage

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

Part 2 Products - Not Used

Part 3 Execution - Not Used

End of Section

Part 1 General

1.1 References to regulatory requirements

- .1 Perform Work in accordance with the 2015 edition of the 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 Specific design and performance requirements listed in specifications or indicated on Drawings may exceed minimum requirements established by referenced Building Code; these requirements will govern over the minimum requirements listed in Building Code
- .3 Codes, Acts, Standards, Regulations
 - .1 Current Project Requirements
 - .1 The current scope of work requires that the electrical ceiling panels and heaters meet, as a minimum, the following Codes, Standards and referenced documents within:
 - .1 National Building Code of Canada, 2015.
 - .2 CSA C22.1 2018, "Canadian Electrical Code".
 - .3 Provincial Building Codes
 - .4 All requirements of the Authority Having Jurisdiction (AHJ)
 - .5 The expectation was and will be to meet or exceed requirements of Specified standards, codes and referenced documents identified in section 1.7.2; and Contract documents
 - .6 Specific design and performance requirements listed in specifications or indicated on Drawings may exceed minimum requirements established by referenced Building Code; these requirements will govern over the minimum requirements listed in Building Code. Meet or exceed requirements of:
 - .1 Contract documents.
 - .2 Specified standards, codes and referenced documents.

1.2 Hazardous material discovery

- .1 Asbestos and lead are found onsite. There is asbestos in the window putty in the Big House basement and there is lead paint in the window wells of the Big House basement, however the scope of work does not include disturbing these specific areas.
- .2 Asbestos: demolition of spray or trowel-applied asbestos is hazardous to health. Stop work immediately when material resembling spray or trowel-applied asbestos is encountered during demolition work.
- .3 Mould: stop work immediately when material resembling mould is encountered during demolition work. Notify Departmental Representative and await direction on how to proceed.

1.3 Building smoking environment

- .1 Comply with smoking restrictions and municipal by-laws. Smoking is not permitted within the fort walls or on historical grounds. Smoking is only permitted in contractor vehicles or in contractor laydown area as indicated on drawing number C1.

- .2 Contractor to provide receptacles.

1.4 Quality assurance

- .1 Regulatory Requirements: Except as otherwise specified, Contractor shall apply for, obtain, and pay fees associated with, permits, licenses, certificates, and approvals required by regulatory requirements.

Part 2 Products

2.1 Permits

- .1 Permits:
 - .1 Contractor shall apply for, obtain, and pay for necessary permits where required by Authority Having Jurisdiction (AHJ). The AHJ is Parks Canada.
 - .2 AHJ will issue appropriate instructions to Contractor for correction to Work where Contract Document deficiencies are required to be corrected in order to obtain occupancy permits, including partial occupancy permits.
 - .3 Contractor shall correct deficiencies in accordance with AHJ's instructions. Where deficiency is not corrected, Departmental Representative reserves the right to make correction and charge Constructor for costs incurred.

Part 3 Execution - Not Used

End of Section

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 work is found not in accordance with Contract Documents, the Contractor will correct work and pay cost of examination and correction. If work is found in accordance with Contract Documents Departmental Representative shall pay cost of examination and replacement.

1.2 Independent inspection agencies

- .1 Provide equipment required for executing inspection and testing by appointed agencies.
- .2 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .3 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Park Canada. Pay costs for retesting and reinspection.

1.3 Access to work

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

1.4 Procedures

- .1 Notify appropriate agency 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 re-execute in accordance with Contract Documents.
- .2 Contractor to repair any damages as a result of contractor working outside of scope by such removals or replacements promptly.

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

1.6 Reports

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

1.7 Mock-ups

- .1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of Sections required to provide mock-ups.
- .2 Construct in locations acceptable to Departmental Representative..
- .3 Prepare mock-ups for Departmental Representative review with reasonable promptness and in orderly sequence, to not cause delays in Work.
- .4 Failure to prepare mock-ups in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

Part 2 Products - Not Used

Part 3 Execution - Not Used

End of Section

Part 1 General

1.1 Action and informational submittals

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan, EPP (Environmental Protection Plan), SRP (Hazardous Material Spill Response Plan i.e. fuel spill) and ERP (Emergency Response Plan i.e. evacuation procedures etc.), hot work safety procedures within 7 days after date of Notice to Proceed and prior to commencement of Work. These documents will be reviewed by the Departmental Representative and must be approved prior to any work on site commencing.
 - .1 Health and Safety Plan must include:
 - .1 Results of site specific safety hazard and COVID-19 assessment.
 - .2 Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.
 - .3 Submit any COVID-19 documents as provincially and/or federally required.
 - .2 Environmental Protection Plan/ Spill Response Plan. In the event of any spill, regardless of the quantity, containment and cleanup are at the full cost and the responsibility of the contractor. The Departmental Representative is to be notified immediately. Spills to be dealt with immediately in accordance with the spill response plan, including reporting. Environmental Protection Plan/ Spill Response Plan must at minimum, but not limited to include the following:
 - .1 How fueling will be done?
 - .2 Type of fuel to be used?
 - .3 Size of storage tank?
 - .4 Approximate frequency of refuelling.
 - .5 If the fuelling system is automated or manual?
 - .6 Where shut downs are located?
 - .7 Safeguards in place in the event of emergency.
 - .8 Contact names and numbers for equipment owner.
 - .9 Contact names and numbers in the event of an emergency.
 - .3 Hot Work Safety Plan Hot work increases the risk of fire onsite. The contractor is responsible to ensure all staff conducting hot work are properly trained and authorized to safely conduct the work they are carrying out. Hot work equipment is to be inspected prior to each use to ensure its safe operating. This can include, but is not limited to welding, soldering and cutting. A Hot Work Safety Plan is to be submitted prior to work commencing. Parks Canada requires notice prior to conducting hot work to prevent the accidental activation of the fire alarm system. The plan shall include at minimum, but not limited to:
 - .1 Procedures and safe usage protocols for all heat, flame and spark-producing equipment
 - .2 Establishing the location of hot work areas
 - .3 Identifying the proper personal protective equipment (PPE) needed during the hot work procedures

- .4 Process for air monitoring in the event a potentially explosive atmosphere is identified.
- .5 Process for notifying Departmental Representative that hot work is commencing and ending to allow for fire alarm systems to be shut down and reactivated again.
- .6 These plans are to be onsite at all times. Onsite staff are to have the ability to comply and implement them confidently as fully trained individuals.

1.2 Installation and removal

- .1 Contractor to prepare a site plan. Refer to drawing number C1 for where the preapproved laydown area is, where fencing is to be installed for each building and roads for site access. Contractor's plan to detail indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation. Contractor to supply and install fencing for their laydown area.
- .2 Contractor to indicate use of supplemental or other staging area's on site map provided by Parks Canada.
- .3 Provide construction facilities in order to execute work expeditiously.
- .4 Remove from site all such work after use.
- .5 Fencing:
 - .1 Contractor to supply and install fencing around the buildings to prevent public access.
 - .2 Above ground foot or anchor blocks for fencing required. Below ground surface anchoring, digging or pounding in for fence anchoring is not permitted.

1.3 Scaffolding

- .1 Scaffolding in accordance with CAN/CSA-S269.2.
- .2 Provide scaffolding location plan to Departmental Representative. Indicate type of scaffolding to be used.
- .3 Below ground surface anchoring, digging or pounding in of scaffolding supports is not permitted.
- .4 Provide ground protection under scaffolding.

1.4 Lifts/Hoisting

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

1.5 Site storage/loading

- .1 Do not load or permit to load any part of Work with weight or force that will endanger Work, the area surrounding the heritage structures or heritage furnishing.

1.6 Construction parking

- .1 Parking will be permitted in the laydown area as indicated in Drawing C1.

- .2 No parking is permitted on grass or landscaped areas.
- .3 Provide and maintain adequate access to project site.
- .4 All vehicles and deliveries are restricted to established roadways. This is to be confirmed by Parks Canada.

1.7 Security

- .1 Comply with existing site security requirements. Consult with Departmental Representative for security protocols and requirements.
- .2 Contractor responsible for the security of their construction and laydown areas.

1.8 Equipment, tool and materials storage

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

1.9 Sanitary facilities

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

1.10 Protection and maintenance of traffic

- .1 Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by Departmental Representative.
- .2 Lower Fort Garry is open to the public for the duration of this contract. Periodic use of roads other than those to and from the contractor laydown area (as indicated in drawing number C1) such as those inside historic grounds to be discussed and pre-approved by Departmental Representative.
- .3 Protect travelling public from damage to person and property. Maintain 2-metre buffer zone between equipment and heritage buildings.
- .4 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.
- .5 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.

1.11 Clean-up

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

1.12 Construction Signage

- .1 Provide and erect project identification sign marking fenced laydown areas and construction facilities, within three weeks of signing Contract, in a location designated by Departmental Representative.
- .2 Provide project identification site sign comprising foundation, framing, and one 1200 by 2400 mm signboard as detailed and as described below.
- .3 Foundations: no subsurface foundations for signage permitted.
- .4 Contractor signage to be submitted for approval by Departmental Representative
- .5 Signs and notices for safety and instruction in both official languages Graphic symbols to CAN/CSA-Z321.
- .6 Maintain approved signs and notices in good condition for duration of project, and dispose of off-site on completion of project or earlier if directed by Departmental Representative.
- .7 No other signs or advertisements, other than warning signs, are permitted on site.

Part 2 Products - Not Used

Part 3 Execution - Not Used

End of Section

Part 1 General

1.1 Reference standards

- .1 National Building Code of Canada -2015
- .1 Part 8 Safety Measures at Construction and Demolition Sites

1.2 Installation and removal

- .1 Provide temporary controls and barriers as indicated on Sheet C1 in order to execute Work expeditiously.
- .2 Remove from site all such work after use.
- .3 Do not attach or anchor temporary barriers and enclosures to Heritage Buildings or landscape features.

1.3 Access to site

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

1.4 Fire routes

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

1.5 Protection for off-site and public property

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

1.6 Protection of building finishes

- .1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.
- .2 Provide necessary screens, covers, and hoardings.
- .3 Confirm with Departmental Representative locations and installation schedule 5 days prior to installation.
- .4 Be responsible for damage incurred due to lack of or improper protection.

1.7 Waste management and disposal

- .1 Separate waste materials in accordance with Section 01 74 19 - Waste Management and Disposal.

Part 2 Products - Not Used

Part 3 Execution - Not Used

End of Section

Part 1 General

1.1 Reference standards

- .1 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 the 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, 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 Availability

- .1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Departmental Representative of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.
- .2 In event of failure to notify Departmental Representative at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Departmental Representative reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.4 Storage, handling and protection

- .1 Comply with the requirements of the Workplace Hazardous Materials Information System (WHMIS) and safety data sheet (SDS) / material safety data sheet (MSDS) / product safety data sheet (PSDS) regarding use, handling, and storage of materials.

- .2 Handle and store products as per manufacturer's recommendations and or in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .3 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.
- .4 Store products subject to damage from weather in weatherproof enclosures.
- .5 Store sheet materials, like lumber or flat-packs on flat, solid supports and keep clear of ground. Slope to shed moisture.
- .6 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- .7 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.
- .8 Touch-up damaged factory finished surfaces to Departmental Representative, satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.5 Transportation

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

1.6 Manufacturer's instructions

- .1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.
- .2 Notify 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 re-installation at no increase in Contract Price or Contract Time.

1.7 Quality of work

- .1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify 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. The electrical contractor must have at least of five (5) years' experience in similar scope and size of this Lower Fort Garry project. 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.

1.8 Coordination

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

- .2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.9 Concealment

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

1.10 Remedial work

- .1 Refer to Section 01 73 00 - Execution.
- .2 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Coordinate adjacent affected Work as required.
- .3 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.11 Location of fixtures

- .1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate. Confirm locations with Departmental Representative before installation.
- .2 Inform Departmental Representative of conflicting installation. Install as directed by Departmental Representative.

1.12 Fastenings

- .1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.
- .2 Prevent electrolytic action between dissimilar metals and materials.
- .3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.
- .4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.
- .5 Keep exposed fastenings to a minimum, space evenly and install neatly.
- .6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.
- .7 Any historic cut nails required for the work will be provided and supplied by Parks Canada.

1.13 Fastenings - equipment

- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.
- .3 Bolts may not project more than one diameter beyond nuts.
- .4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

1.14 Protection of work in progress

- .1 Prevent overloading of parts of building. Do not cut, drill or sleeve load bearing structural member, without written approval of Departmental Representative.

1.15 Existing utilities

- .1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work, and/or building occupants.
- .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 - Not Used

Part 3 Execution - Not Used

End of Section

Part 1 General

1.1 Action and informational submittals

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit written request in advance of cutting or alteration which affects:
 - .1 Structural integrity of elements of project.
 - .2 Integrity of weather-exposed or moisture-resistant elements.
 - .3 Efficiency, maintenance, or safety of operational elements.
 - .4 Visual qualities of sight-exposed elements.
 - .5 Work of Departmental Representative or separate contractor.
- .3 Include in request:
 - .1 Identification of project.
 - .2 Location and description of affected Work.
 - .3 Statement on necessity for cutting or alteration.
 - .4 Description of proposed Work, and products to be used.
 - .5 Alternatives to cutting and patching.
 - .6 Effect on Work of Departmental Representative or separate contractor.
 - .7 Written permission of affected separate contractor.
 - .8 Date and time work will be executed.

1.2 Materials

- .1 Required for original installation.
- .2 Incorporate previously salvaged, existing materials in reconstruction as dictated by the drawings and Departmental Representative permission, as specified, or as indicated. Pieces of millwork will be marked as to exact location for re-installation.
- .3 Change in Materials: Submit request for substitution in accordance with Section 01 33 00 - Submittal Procedures.

1.3 Preparation

- .1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
- .2 After uncovering, inspect conditions affecting performance of Work. Notify Departmental Representative if conditions require additional work or alteration of work proposed.
- .3 Provide protection from elements for areas which are to be exposed by uncovering work; maintain excavations free of water.

1.4 Execution

- .1 Execute cutting, fitting, and patching including excavation and fill, to complete Work.
- .2 Fit several parts together, to integrate with other Work.
- .3 Uncover Work to install ill-timed Work.
- .4 Remove and replace defective and non-conforming Work.
- .5 Remove samples of installed Work for testing.

- .6 Execute Work by methods to avoid damage to other Work, removing only that which is damaged to provide proper surface which will receive patching and finishing.
- .7 Where additional openings or penetrations to building fabric are required, work must be completed without alteration to original historic fabric. Approval by Departmental Representative is required prior to cutting or drilling is required
- .8 Prevent the migration of dust and debris to non-work areas.
- .9 Restore work with new products in accordance with requirements of Contract Documents.
- .10 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- .11 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.
- .12 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

1.5 Waste management and disposal

- .1 Separate waste materials in accordance with Section 01 74 19 - Waste Management and Disposal.

1.6 Quality Assurance

- .1 Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
 - .1 Structural Elements: When cutting and patching structural elements, notify Departmental Representative of locations and details of cutting and await directions from Departmental Representative before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.
 - .2 Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational elements include the following:
 - .1 Primary operational systems and equipment.
 - .2 Fire separation assemblies
 - .3 Air or smoke barriers
 - .4 Fire-suppression systems
 - .5 Mechanical systems piping and ducts.
 - .6 Control systems.
 - .7 Communication systems
 - .8 Fire-detection and -alarm systems
 - .9 Electrical wiring systems
 - .10 Operating systems of special construction.
 - .3 Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in

increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:

- .1 Water, moisture, or vapour barriers
 - .2 Membranes and flashings
 - .3 Sprayed fire-resistive material
 - .4 Equipment supports.
 - .5 Piping, ductwork, vessels, and equipment
 - .6 Noise- and vibration-control elements and systems.
- .4 Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Departmental Representative's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

Part 2 Products

2.1 Materials

- .1 In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that match the forms, composition and detailing of sound versions of the same elements and that visually match in-place adjacent surfaces to the fullest extent possible.
 - .1 If identical materials are unavailable, cannot be used or where there is insufficient physical evidence, use materials that, when installed, will provide a match acceptable to Departmental Representative for the visual and functional performance of in-place materials.
- .2 Incorporate salvaged, used material in new construction as indicated, specified or only with Departmental Representative permission.
- .3 Except for items or materials indicated to be reused, reinstalled, or otherwise indicated to remain Parks Canada property, demolished materials shall become Contractor's property and shall be removed from Project site.

Part 3 Execution

3.1 Examination

- .1 Existing Conditions: The existence and location of services and construction indicated as existing are not guaranteed. Before beginning, investigate and verify the existence and location of mechanical and electrical systems, and other construction affecting the Work. Photograph existing conditions as specified in Section 01 33 00 Submittal Procedures.
- .2 Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with installer or applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
 - .1 Examine the existing condition of building elements to determine how to apply a minimal intervention approach using the gentlest means possible for any intervention and respecting heritage value.
 - .2 Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.

- .3 Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
- .4 Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- .5 Existence and location of concealed utilities and construction indicated as existing are not guaranteed. Before beginning Work, investigate and verify existence and location of mechanical and electrical systems, and other construction affecting the Work.
- .3 Beginning of cutting and patching, and construction means acceptance of existing conditions and implies dimensions have been considered, verified and are acceptable.
- .4 Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions
- .5 Hazardous Materials: Hazardous materials are known to be present in building materials where interior alteration work is scheduled. Refer to Section 00 31 00 – Available Project Information for types and locations of hazardous materials.
 - .1 Should material resembling hazardous materials be encountered, stop work, take preventative measures, and notify Departmental Representative immediately.
 - .2 Do not proceed until written instructions have been received from Departmental Representative.

3.2 Notice

- .1 Notify Departmental Representative before disrupting building access or services.

3.3 Preparation

- .1 Field Measurements: Take field measurements as required to fit the Work properly
- .2 Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

3.4 Installation

- .1 General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - .1 Make vertical work plumb and make horizontal work level.
 - .2 Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement
- .2 Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- .3 Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- .4 Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.
- .5 Tools and Equipment: Do not use tools or equipment that produce harmful noise levels
- .6 Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

- .7 Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions

3.5 Cutting and Patching

- .1 Cutting and Patching, General: Assign work of moving, removal, cutting and patching to trades qualified to perform work in manner to cause least damage to each type of work.
 - .1 Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- .2 Temporary Support: Provide temporary support of work to be cut.
- .3 Protection: Protect in-place construction during cutting and patching to prevent damage. Provide temporary dust screens, covers, railings, supports and other protection as required.
- .4 Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in Section 01 11 00 - Summary of Work.
- .5 Where Work of this Contract affects existing structures, equipment, roofing, ceiling or floor assemblies, piping, ductwork or conduit, etc. above, below or beyond areas of scheduled work, patch and repair to standard of construction of surrounding materials. Do such work at no additional cost to the Contract.
- .6 Where penetrations through existing walls or floors result from the installation of new equipment, or the removal or relocation of existing equipment, piping, ductwork or conduit, repair to standard of construction of surrounding materials.
- .7 Existing Mechanical/Electrical Systems:
 - .1 Where existing services/systems are required to be replaced, removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas
 - .2 Arrange for temporary disruption of existing services with Departmental Representative
- .8 Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, using methods least likely to damage adjoining construction.
 - .1 In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use
 - .2 Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 - .3 Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 - .4 Proceed with patching after construction operations requiring cutting are complete.
 - .5 Remove or cut openings in interior partitions to accommodate new work.

- .6 Cut finish surfaces, plaster, metals by methods to terminate surfaces in straight lines, at natural points of division.
- .9 Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable
 - .1 Fire-Resistant Rated Assemblies: Where infill or patching occurs in a fire resistance rated assembly, use materials to match rating of existing assembly.
 - .2 Exposed Finishes: Restore exposed finishes of patched areas and extend finish into retained adjoining construction in a manner that will minimize evidence of patching and refinishing
 - .1 Make smooth, approved transition where new work abuts, finishes flush with existing work
 - .2 Patch, and repair to provide an even-plane surface of uniform appearance
 - .3 Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance
 - .1 Terminate existing surface along straight lines at natural division line, provide approved trim when finished surfaces cut in manner preventing smooth transition with new work.
 - .2 Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces at a distance of 1.5 m.
 - .4 Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure
- .10 Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces

End of Section

Part 1 General

1.1 Project cleanliness

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by Parks Canada or other Contractors.
- .2 Protect non-work surfaces and floors from spills and against debris accumulation preventing the need for excessive cleaning or repair non-construction surfaces.
- .3 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, unless approved by Departmental Representative.
- .4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .5 Provide and use marked separate bins for recycling. Refer to Section 01 74 19 - Waste Management and Disposal.
- .6 Dispose of waste materials and debris off site in appropriate manner. Do not use on-site garbage and recycling containers, nor toilets, sinks or drains for waste-water or the cleaning of equipment.
- .7 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations. Provide dust and debris isolation methods to limit the spread of dust and debris to other rooms.
- .8 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .9 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .10 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .11 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.
- .12 Take precautions to prevent depositing of mud and debris on roadways, boardwalks, on and adjacent areas to the area of Work. Promptly clean up mud and debris.

1.2 Final cleaning

- .1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .3 Prior to final review remove surplus products, tools, construction machinery and equipment.
- .4 Remove waste products and debris other than that caused by Parks Canada or other Contractors.
- .5 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
- .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .7 Clean and polish mechanical and electrical fixtures impacted by work. Replace broken, scratched or disfigured glass.

- .8 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and floors.
- .9 Clean lighting reflectors, lenses, and other lighting surfaces.
- .10 Vacuum clean and dust building interiors, behind grilles, louvres and screens.
- .11 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
- .12 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
- .13 Remove dirt and other disfiguration from exterior surfaces.
- .14 Sweep and wash clean paved areas.
- .15 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.
- .16 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.
- .17 Remove waste materials in accordance with Section 01 74 19 - Waste Management and Disposal.

Part 2 Products - Not Used

Part 3 Execution - Not Used

End of Section

Part 1 General

1.1 Definitions

- .1 Clean Waste: Untreated and unpainted; not contaminated with oils, solvents, sealants or similar materials.
- .2 Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, re modeling operations. repair and demolition
- .3 Hazardous: Exhibiting the characteristics of hazardous substances including properties such as ignitability, corrosiveness, toxicity or reactivity.
- .4 Non hazardous: Exhibiting none of the characteristics of hazardous substances, including properties such as ignitability, corrosiveness, toxicity, or reactivity.
- .5 Non toxic: Not poisonous to humans either immediately or after a long period of exposure.
- .6 Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.
- .7 Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.
- .8 Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form; recycling does not include burning, incinerating, or thermally destroying waste.
- .9 Return: To give back reusable items or unused products to vendors for credit.
- .10 Reuse: To reuse a construction waste material in some manner on the project site.
- .11 Salvage: To remove a waste material from the project site to another site for resale or reuse by others.
- .12 Sediment: Soil and other debris that has been eroded and transported by storm or well production run off water.
- .13 Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.
- .14 Toxic: Poisonous to humans either immediately or after a long period of exposure.
- .15 Trash: Any product or material unable to be reused, returned, recycled, or salvaged.
- .16 Volatile Organic Compounds (VOC's): Chemical compounds common in and emitted by many building products over time through outgassing:
 - .1 Solvents in paints and other coatings;
 - .2 Wood preservatives; strippers and household cleaners;
 - .3 Adhesives in particleboard, fiberboard, and some plywood; and foam insulation.
 - .4 When released, VOC's can contribute to the formation of smog and can cause respiratory tract problems, headaches, eye irritations, nausea, damage to the liver, kidneys, and central nervous system, and possibly cancer.
- .17 Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.
- .18 Construction Waste Management Plan: A project related plan for the collection, transportation, and disposal of the waste generated at the construction site; the purpose of the plan is to ultimately reduce the amount of material being landfilled.

1.2 Administrative requirements

- .1 Coordination: Coordinate waste management requirements with all Divisions of the Work for the project, and ensure that requirements of the Construction Waste Management Plan are followed.
- .2 Preconstruction Meeting: Arrange a pre-construction meeting in accordance with Section 01 31 19 – Project Meetings before starting any Work of the Contract attended by the Contractor, affected Subcontractor 's and Departmental Representative to discuss the Contractor 's Construction Waste Management Plan and to develop mutual understanding of the requirements for a consistent policy towards waste reduction and recycling.

1.3 Submittals

- .1 Provide required information in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Action Submittals: Provide the following submittals before starting any work of this Section:
 - .1 Draft Construction Waste Management Plan (Draft CWM Plan): Submit to Departmental Representative a preliminary analysis of anticipated site generated waste by listing a minimum of five (5) construction or demolition waste streams that have potential to generate the most volume of material indicating methods that will be used to divert construction waste from landfill and source reduction strategies; Departmental Representative will provide commentary before development of Contractor 's Construction Waste Management Plan.
 - .2 Construction Waste Management Plan (CWM Plan): Submit a CWM Plan for this project prior to any waste removal from site and that includes the following information:

1.4 Delivery, storage and handling

- .1 Storage Requirements: Implement a recycling/reuse program that includes separate collection of waste materials as appropriate to the project waste and the available recycling and reuse programs in the project area.
- .2 Handling Requirements: Clean materials that are contaminated before placing in collection containers and ensure that waste destined for landfill does not get mixed in with recycled materials:
 - .1 Deliver materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to recycling process.
 - .2 Arrange for collection by or delivery to the appropriate recycling or reuse facility.
- .3 Hazardous Waste and Hazardous Materials: Handle in accordance with applicable regulations.
- .4 Protect, stockpile, store, and catalogue salvaged items.
- .5 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facilities.
- .6 Protect surface drainage, mechanical and electrical from damage and blockage.

1.5 Disposal of wastes

- .1 Do not bury or burn rubbish or waste materials.

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

Part 2 Products - Not Used

Part 3 Execution

3.1 (CWM plan) implementation

- .1 Manager: Contractor is responsible for designating an on site party or parties responsible for instructing workers and overseeing and documenting results of the CWM Plan for the project.
- .2 Distribution: Distribute copies of the CWM Plan to the job site foreman, each Subcontractor, the Departmental Representative and other site personnel as required to maintain CWM Plan.
- .3 Instruction: Provide on site instruction of appropriate separation, handling, and recycling, salvage, reuse, composting and return methods being used for the project to Subcontractor 's at appropriate stages of the project.

End of Section

Part 1 General

1.1 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 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 in English 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, balanced, and fully operational.
 - .4 Certificates: supply all certificated submitted as required by Code, Parks Canada Fire protection services, and Utility companies
 - .5 Operation of systems: Demonstrated to Owner's personnel.
 - .6 Commissioning of mechanical systems: completed in accordance with 01 91 13 - General Commissioning (Cx) Requirements and copies of final Commissioning Report submitted to Departmental Representative.
 - .7 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 is incomplete according to Departmental Representative, complete outstanding items and request re-inspection.
 - .5 Declaration of Substantial Performance: when Departmental Representative considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.

1.2 Final cleaning

- .1 Clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.
- .2 Waste Management: Remove waste materials in accordance with Section 01 74 19 - Waste management and disposal.

Part 2 Products - Not Used

Part 3 Execution - Not Used

End of Section

Part 1 General

1.1 Administrative requirements

- .1 Pre-warranty Meeting:
 - .1 Convene meeting one week prior to contract completion with Departmental Representative, in accordance with Section 01 31 19 - Project Meetings to:
 - .1 Verify Project requirements.
 - .2 Review warranty requirements and 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.
 - .3 Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.
 - .4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

1.2 Action and informational submittals

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Two weeks prior to demonstration and training of the Work, submit to the Departmental Representative, two printed copies as well as a digital final copy of operating and maintenance manuals in English.
- .3 Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.
- .4 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, contract # 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 data, or typewritten data.
- .8 Drawings: provide with reinforced punched binder tab.
 - .1 Bind in with text; fold larger drawings to size of text pages.
- .9 Provide 1:1 scaled CAD files in dwg format on CD or DVD.

- .10 Provide high resolution digital photos in .jpg or .tiff format on CD/ DVD or Flash Drive. Refer to Section 01 33 00 Submittal Procedures.

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 Departmental Representative and Contractor with name of responsible parties.
 - .3 Schedule of products and systems, indexed to content of volume.
- .2 For each product or system:
 - .1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- .3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information. Include applicable MSDS / SDS / PSDS data sheets.
- .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.
- .6 Training: refer to Section 01 79 00 - Demonstration and Training.

1.5 As -built documents and samples

- .1 Maintain, in addition to requirements in General Conditions, 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.
- .6 Submit as-built drawings to Departmental Representative.
 - .1 Provide in electronic form as CAD dwg format, on CD or DVD.

1.6 Recording information on project record documents

- .1 Record information concurrently with construction progress.
 - .1 Do not conceal Work until required information is recorded.
- .2 Contract Drawings and shop drawings: mark each item to record actual construction, including:
 - .1 Field changes of dimension and detail.
 - .2 Changes made by change orders.
 - .3 Details not on original Contract Drawings.
 - .4 Referenced Standards to related shop drawings and modifications.
- .3 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.
- .4 Provide digital photos for site records to the Departmental Representative. Refer to Section 01 33 00 - Submittal Procedures for requirements, format and submission method.
- .5 At substantial completion of project and prior to final inspection, submit as-built drawings and project manual to Departmental Representative.
 - .1 Departmental Representative will review and initial, to concur with content of the final mark-ups.

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 Panel board circuit directories: provide electrical service characteristics, controls, and communications.
- .3 Include installed colour coded wiring diagrams.
- .4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences.
 - .1 Include regulation, control, stopping, shut-down, and emergency instructions.
 - .2 Include summer, winter, and any special operating instructions.
- .5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- .6 Provide servicing and lubrication schedule, and list of lubricants required.
- .7 Include manufacturer's printed operation and maintenance instructions.
- .8 Include sequence of operation by controls manufacturer.
- .9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- .10 Provide installed control diagrams by controls manufacturer.
- .11 Provide Contractor's co-ordination drawings, with installed colour coded piping diagrams.

- .12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- .13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- .14 Include test and balancing reports as specified in Section 01 91 13 - GENERAL COMMISSIONING REQUIREMENTS.
- .15 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.
- .4 Additional requirements: as specified in individual specifications sections.

1.9 Delivery, storage and handling

- .1 Provide spare parts, in quantities specified in individual specification sections. Provide items of same manufacture and quality as items in work.
- .2 Store spare parts, maintenance materials, and special tools in manner to prevent damage, deterioration or theft.
- .3 Store in original and undamaged condition with manufacturer's seal and labels intact.
- .4 Store components subject to damage from weather in weatherproof enclosures.
- .5 Store paints and freezable materials in a heated and ventilated room.
- .6 Remove and replace damaged products at own expense and for review by Departmental Representative.
- .7 Obtain receipt for delivered products and submit prior to final payment.

1.10 Warranties and bonds

- .1 Develop warranty management plan to contain information relevant to Warranties.
- .2 Submit warranty management plan, 30 days before planned pre-warranty conference, to Departmental Representative approval.
- .3 Warranty management plan to include required actions and documents to assure that Departmental Representative receives warranties to which it is entitled.
- .4 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.
- .5 Submit, warranty information made available during construction phase, to Departmental Representative for approval prior to each monthly pay estimate.
- .6 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:
 - .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.

- .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
- .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.
- .4 Verify that documents are in proper form, contain full information, and are notarized.
- .5 Co-execute submittals when required.
- .6 Retain warranties and bonds until time specified for submittal.
- .7 Except for items put into use with Departmental Representative's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
- .8 Conduct 4, 9, and 12 month warranty inspections, measured from time of acceptance, by Departmental Representative.
- .9 Include information contained in warranty management plan as follows:
 - .1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, subcontractors, manufacturers or suppliers involved.
 - .2 Provide list for each warranted equipment, item, feature of construction or system indicating:
 - .1 Name of item.
 - .2 Model and serial numbers.
 - .3 Location where installed.
 - .4 Name and phone numbers of manufacturers or suppliers.
 - .5 Names, addresses and telephone numbers of sources of spare parts.
 - .6 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.
 - .7 Cross-reference to warranty certificates as applicable.
 - .8 Starting point and duration of warranty period.
 - .9 Summary of maintenance procedures required to continue warranty in force.
 - .10 Cross-Reference to specific pertinent Operation and Maintenance manuals.
 - .11 Organization, names and phone numbers of persons to call for warranty service.
 - .12 Typical response time and repair time expected for various warranted equipment.
 - .3 Contractor's plans for attendance at 4, 9, and 12 month post-construction warranty inspections.
 - .4 Procedure and status of tagging of equipment covered by extended warranties.
 - .5 Post copies of instructions near selected pieces of equipment where operation is critical for warranty and/or safety reasons.
- .10 Respond in timely manner to oral or written notification of required construction warranty repair work.
- .11 Written verification to follow oral instructions.

- .1 Failure to respond will be cause for the Departmental Representative to proceed with action against Contractor.

1.11 Warranty Tags

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

1.12 Operations and Maintenance Manual Checklist

- .1 Operations and Maintenance Manual requirements
- .2 The contractor shall compile O&M manuals as required by the project specifications with the following format:
 - .1 Assembled in 1" or greater, 3 ring binders and one electronic copy provided on Memory Stick (or appropriate electronic media).
 - .2 1 hard copy binders and 1 Memory Device/Thumb Drive copy of Operations and Maintenance (O&M)
Manuals are required upon project completion. O and M Manuals are to be assembled in a 1" or greater 3 ring binder labelled on the front cover and on the binder edge with the: Building Name and address, project name, project number, completed date (ex. October 2016).
- .3 Contents of the Operations and Maintenance Manual:
 - .1 Binder Cover and Binder Edge and Title Page:
 - .1 Project Name, Building Name, address, project number, Project Completion Date.
 - .2 Table of Contents:
 - .1 Project Name, Building Name, address, project number, Project Completion Date and table of contents.
 - .3 Tab A - Contact Information:
 - .1 Include contact information for Consultant, General Contractor and all Sub-Contractors. Contractor Information: name, address, telephone number of manufacturer, installing contractor, 24-hour number for emergency service for all equipment in this section identified by equipment.
 - .4 Tab B - Signed Letter of Warranty

- .1 Signed and dated letter of Warranty to include: project name, project number, location, warranty start date (to be the date of Substantial Completion as declared by Consultant), and all manufacturer and extended warranties.
- .5 Tab C - Shop Drawings:
 - .1 A copy of all start up reports, completed performance verification forms and permits or certification from Authorities Having Jurisdiction.
- .6 Tab D - All Reports:
 - .1 Copies of all reports from Authorities Having Jurisdictions.
- .7 Tab E - Sequence of Operation:
 - .1 Provide Designers and / or Manufactures operating instructions and sequence of operations.
- .8 Tab F - Maintenance and Service Procedures:
 - .1 Specific service and maintenance manuals, preventative and corrective maintenance, with service procedures and schedules.
- .9 Tab G - As Built Drawings:
 - .1 Marked in red ink, by the Contractor and reviewed by the Consultant.
- .10 Tab H - CMMS Data Sheets:
 - .1 A copy of all completed CMMS Data Sheets for all equipment which was deleted, removed, added or replaced.
- .11 Tab I - Site Inspection Reports:
 - .1 This will be provided by the consultant and included in the O&M submission.
 - .2 Inspection report(s) conducted during the implementation of the project.
- .12 Tab J - Final Commissioning Manual:
 - .1 This will be provided by the consultant and included in the O&M submission.
 - .2 Narrative of commissioning activities and challenges that occurred during each phase of the project. Confirmation letter identifying that all performance verification tests have met the requirements of the specifications document, basis of design (if applicable) and requirements of the project.

Part 2 Products - Not Used

Part 3 Execution - Not Used

End of Section

Part 1 General

1.1 Administrative requirements

- .1 Demonstrate scheduled operation and maintenance of equipment and systems to Parks Canada personnel after final inspection, completion of deficiencies, and submission of O&M.
- .2 Parks Canada: provide list of personnel to receive instructions, and co-ordinate their attendance at agreed-upon times.
- .3 Preparation:
 - .1 Verify conditions for demonstration and instructions comply with requirements.
 - .2 Verify designated personnel are present.
- .4 Demonstration and Instructions:
 - .1 Instruct personnel in phases of operation and maintenance using operation and maintenance manuals as basis of instruction.
 - .2 Review contents of manual in detail to explain aspects of operation and maintenance.
 - .3 Prepare and insert additional data in operations and maintenance manuals when needed during instructions.

1.2 Action and informational submittals

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit schedule of time and date for demonstration of each item of equipment and each system two weeks prior to designated dates, for Departmental Representative approval.
- .3 Submit reports within one week after completion of demonstration, that demonstration and instructions have been satisfactorily completed.
- .4 Give time and date of each demonstration, with list of persons present.
- .5 Provide copies of completed operation and maintenance manuals for use in demonstrations and instructions.

1.3 Quality assurance

- .1 When specified in individual Sections requiring manufacturer to provide authorized representative to demonstrate operation of equipment and systems:
 - .1 Instruct Parks Canada's personnel.
 - .2 Provide written report that demonstration and instructions have been completed.

Part 2 Products - Not Used

Part 3 Execution - Not Used

End of Section

Part 1 General

1.1 Action and informational submittals

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for forced air heaters and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Manufacturer's Instructions: provide to indicate special handling criteria, installation sequence and cleaning procedures.

1.2 Closeout submittals

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for forced air heaters for incorporation into manual.

1.3 Delivery, storage and handling

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect forced air heaters from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.

Part 2 Products

2.1 Forced air heaters

- .1 Forced air heater FH-1 and FH-2, floor mounted as follows:
 - .1 Type: Floor mounted architectural cabinet convertor.
 - .2 Elements and Fan: three tubular elements, stainless steel sheathed with boxed aluminum fins.
 - .1 Maximum sound level: 60 dB
 - .2 Motor: totally enclosed, shaded pole, impedance protected motor.
 - .3 Colour: Submit colour to Departmental Representative for approval.
 - .4 Design
 - .1 Minimum Capacity: 2 kW
- .2 Controls (TFH-1, TFH-2):
 - .1 External low voltage thermostat with an 'OFF' option.
 - .2 Thermostat to come with lockable enclosure.

Part 3 Execution

3.1 Installation

- .1 Install heaters in accordance with manufacturer's written recommendations.
- .2 Make power and control connections.

3.2 Field quality control

- .1 Perform tests in accordance with Section 26 05 00 - Common Work Results for Electrical.

3.3 Cleaning

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

3.4 Protection

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by forced air heaters installation.

End of Section

Part 1 General

1.1 Reference standards

- .1 National Fire Protection Association (NFPA)
 - .1 NFPA 90A-2012, Standard for the Installation of Air Conditioning and Ventilating Systems.
 - .2 NFPA 90B-2012, Standard for the Installation of Warm Air Heating and Air Conditioning Systems (ANSI).
- .2 Underwriters' Laboratories (UL) Inc.
 - .1 UL 2021-1997, Fixed and Location-Dedicated Electric Room Heaters.

1.2 Action and informational submittals

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for unit heaters and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Manufacturer's Instructions: provide to indicate special handling criteria, installation sequence and cleaning procedures.
- .4 Shop Drawings:
 - .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Indicate on drawings:
 - .1 Equipment, capacity and piping connections.
 - .2 Dimensions, internal and external construction details, recommended method of installation with proposed structural steel support, sizes and location of mounting bolt holes.

1.3 Closeout submittals

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for unit heaters for incorporation into manual.

1.4 Delivery, storage and handling

- .1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions.
- .2 Deliver, store and handle materials in accordance with manufacturer's written instructions
- .3 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .4 Storage and Handling Requirements:
 - .1 Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect unit heaters from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.

Part 2 Products

2.1 Unit heaters (UH-1)

- .1 Type: Wall mounted with a quiet helicoidal fan and totally enclosed motor.
- .2 Heating Capacity: 2 kW
- .3 Maximum sound level: 60 dB
- .4 Unit to come with a low voltage relay kit
- .5 Colour: Submit colour to Departmental Representative for approval.
- .6 Control TUH-1
 - .1 External low voltage wall thermostat with an 'OFF' option.
 - .2 Thermostat to come with lockable enclosure

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 unit heaters 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 Installation

- .1 Install in accordance with manufacturer's instructions.
- .2 Include double swing pipe joints as indicated.
- .3 Check final location with Departmental Representative if different from that indicated prior to installation.
 - .1 Should deviations beyond allowable clearances arise, request and follow Departmental Representative's directive.
- .4 Provide supplementary suspension steel as required.
- .5 Install thermostats in locations indicated.
- .6 Before acceptance, set discharge patterns and fan speeds to suit requirements.

3.3 Cleaning

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

3.4 Protection

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

- .2 Repair damage to adjacent materials caused by unit heaters installation.

End of Section

Part 1 General

1.1 Action and informational submittals

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for radiant heating units and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Manufacturer's Instructions: provide to indicate special handling criteria, installation sequence and cleaning procedures.
- .3 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Manitoba, Canada.
- .4 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

1.2 Closeout submittals

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for radiant heating units for incorporation into manual.

1.3 Delivery, storage and handling

- .1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.

Part 2 Products

2.1 General

- .1 Thermal heating panels have been purchased by Parks Canada in advance and will be provided to the contractor for use onsite.
- .2 Purchased thermal heating panels: ThermaRay electric radiant heating panels

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 radiant heating unit installation in accordance with manufacturer's written instructions.

3.2 Installation

- .1 Follow manufacturer's detailed installation, testing, operation and maintenance instructions.

3.3 Cleaning

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

End of Section

Part 1 General

1.1 Reference standards

- .1 CSA Group
 - .1 CSA C22.1-18, Canadian Electrical Code, Part 1, 24th Edition.

1.2 Definitions

- .1 Electrical and electronic terms: unless otherwise specified or indicated, terms used in these specifications, and on drawings, are those defined by IEEE SP1122.

1.3 Action and informational submittals

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for review and approval and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop drawings:
 - .1 Submit wiring diagrams and installation details of equipment indicating proposed location, layout and arrangement, control panels, accessories, piping, ductwork, and other items that must be shown to ensure coordinated installation and approval by Departmental Representative.
 - .2 Identify on wiring diagrams circuit terminals and indicate internal wiring for each item of equipment and interconnection between each item of equipment.
 - .3 Indicate on drawings clearances for operation, maintenance, and replacement of operating equipment devices.
 - .4 If changes are required, notify Departmental Representative of these changes before they are made.
- .4 Certificates:
 - .1 Provide CSA certified equipment.
 - .2 Where CSA certified equipment is not available, submit such equipment to authority having jurisdiction for special approval before delivery to site
 - .3 Submit test results of installed electrical systems and instrumentation
 - .4 Permits and fees: in accordance with General Conditions of contract
 - .5 Submit, upon completion of Work, load balance report
 - .6 Submit certificate of acceptance from authority having jurisdiction upon completion of Work to Departmental Representative.
- .5 Manufacturer's Field Reports: submit to Departmental Representative manufacturer's written report, within 3 days of review, verifying compliance of Work and electrical system and instrumentation testing, as described in PART 3 - FIELD QUALITY CONTROL.

1.4 Closeout submittals

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for all equipment for incorporation into manual.

- .1 Provide for each system and principal item of equipment as specified in technical sections for use by operation and maintenance personnel.
- .2 Operating instructions to include following:
 - .1 Wiring diagrams, control diagrams, and control sequence for each principal system and item of equipment.
 - .2 Start up, proper adjustment, operating, lubrication, and shutdown procedures.
 - .3 Safety precautions.
 - .4 Procedures to be followed in event of equipment failure.
 - .5 Other items of instruction as recommended by manufacturer of each system or item of equipment.
- .3 Ensure operating instructions will not fade when exposed to sunlight and are secured to prevent easy removal and peeling.

1.5 Delivery, storage and handling

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect all materials from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.

Part 2 Products

2.1 Design requirements

- .1 Operating voltages: to CAN3-C235.
- .2 Motors, electric heating, control and distribution devices and equipment to operate satisfactorily at 60 Hz within normal operating limits established by above standard.
 - .1 Equipment to operate in extreme operating conditions established in above standard without damage to equipment.
- .3 Language operating requirements: provide identification nameplates for control items in English.
- .4 Use one nameplate for both languages.

2.2 Materials and equipment

- .1 Provide equipment and materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Equipment and materials to be CSA certified. Where CSA certified equipment and materials are not available, obtain special approval from the authority having jurisdiction before delivery to site and submit such approval as described in PART 1 - ACTION AND INFORMATIONAL SUBMITTALS.
- .3 Factory assemble control panels and component assemblies.

2.3 Electric motors, equipment and controls

- .1 Verify installation and coordination responsibilities related to motors, equipment and controls, as indicated.

2.4 Wiring terminations

- .1 Ensure lugs, terminals, screws used for termination of wiring are suitable for either copper conductors.

2.5 Equipment identification

- .1 Identify electrical equipment with nameplates as follows:
 - .1 Nameplates: plastic lamacoid tags for equipment.
- .2 Labels: embossed plastic labels with 6 mm high letters unless specified otherwise.
- .3 Wording on labels to be approved by Departmental Representative prior to manufacture.
- .4 Allow for minimum of twenty-five (25) letters per label.
- .5 Nameplates for terminal cabinets and junction boxes to indicate system and/or voltage characteristics.
- .6 Disconnects, starters and contactors: indicate equipment being controlled and voltage.
- .7 Terminal cabinets and pull boxes: indicate system and voltage.
- .8 Update panel schedules.

2.6 Wiring identification

- .1 Identify wiring with permanent indelible identifying markings, coloured plastic tapes, on both ends of phase conductors of feeders and branch circuit wiring.
- .2 Maintain phase sequence and colour coding throughout.
- .3 Colour coding: to CSA C22.1.
- .4 Use colour coded wires in communication cables, matched throughout system.

2.7 Conduit and cable identification

- .1 Colour code conduits, boxes and metallic sheathed cables.
- .2 Code with plastic tape or paint at points where conduit or cable enters wall, ceiling, or floor, and at 15 m intervals.
- .3 Colours: 25 mm wide prime colour and 20 mm wide auxiliary colour.

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 equipment installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of the Departmental Repetitive.
 - .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 the Departmental Repetitive.

3.2 Installation

- .1 Do complete installation in accordance with CSA C22.1 except where specified otherwise.
- .2 Install cables, conduits and fittings embedded or plastered over, close to building structure so furring can be kept to minimum.

3.3 Nameplates and labels

- .1 Ensure manufacturer's nameplates, CSA labels and identification nameplates are visible and legible after equipment is installed.

3.4 Mounting heights

- .1 Mounting height of equipment is from finished floor to centreline of equipment unless specified or indicated otherwise.
- .2 If mounting height of equipment is not specified or indicated on contract drawings, verify with Departmental Representative before proceeding with installation.

3.5 Coordination of protective devices

- .1 Ensure circuit protective devices such as overcurrent trips, relays and fuses are installed to required values and settings.

3.6 Field quality control

- .1 Conduct the following tests in accordance with Section 01 45 00 - Quality Control.
 - .1 Power distribution system including phasing, voltage, grounding and load balancing.
 - .2 Circuits originating from branch distribution panels.
 - .3 Lighting and its controls
 - .4 Motors, heaters and associated control equipment including sequenced operation of systems where applicable.
 - .5 Motors, heaters and associated control equipment including sequenced operation of systems where applicable.
- .2 Carry out tests in presence of the Departmental Representative in operation, care and maintenance of systems, system equipment and components.
- .3 Provide instruments, meters, equipment and personnel required to conduct tests during and at the conclusion of project.
- .4 Manufacturer's Field Services:
 - .1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Field Reports as described in PART 1 - ACTION AND INFORMATIONAL SUBMITTALS.
 - .2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

3.7 System startup

- .1 Instruct Departmental Representative in operation, care and maintenance of systems, system equipment and components.

- .2 Provide these services for such period, and for as many visits as necessary to put equipment in operation, and ensure that operating personnel are conversant with aspects of its care and operation.

3.8 Cleaning

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

End of Section

Part 1 General

1.1 Reference standards

- .1 CSA Group.
 - .1 CSA C22.1-21, Canadian Electrical Code, Part 1 (25th Edition), Safety Standard for Electrical Installations.

1.2 Product data

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

1.3 Delivery, storage and handling

- .1 Packaging Waste Management: remove in accordance with Section 01 74 19 - Waste Management and Disposal.

Part 2 Products

2.1 Building wires

- .1 Conductors: stranded for 10 AWG and larger. Minimum size: 12 AWG.
- .2 Copper conductors: size as indicated, with 600 V insulation of cross-linked thermosetting polyethylene material rated RW90 XLPE.
- .3 Copper conductors: size as indicated, with thermoplastic insulation type NMD90 rated at 600 V.

2.2 Armoured cables

- .1 Conductors: insulated, copper, size as indicated.
- .2 Type: AC90.
- .3 Armour: interlocking type fabricated from galvanized steel strip.
- .4 Type: PVC flame retardant jacket over thermoplastic armour and compliant to applicable Building Code classification for this project.
- .5 Connectors: anti short connectors.

2.3 Control cables

- .1 Type: LVT: 2 soft annealed copper conductors, sized as indicated:
 - .1 Insulation: thermoplastic.
 - .2 Sheath: thermoplastic jacket, and armour of closely wound aluminum wire.

Part 3 Execution

3.1 Field quality control

- .1 Perform tests in accordance with Section 26 05 00 - Common Work Results for Electrical.
- .2 Perform tests using method appropriate to site conditions and to approval of Departmental Representative and local authority having jurisdiction over installation.
- .3 Perform tests before energizing electrical system.

3.2 General cable installation

- .1 Cable Colour Coding: to Section 26 05 00 - Common Work Results for Electrical.
- .2 Conductor length for parallel feeders to be identical.
- .3 Lace or clip groups of feeder cables at distribution centres, pull boxes, and termination points.
- .4 Wiring in walls: typically drop or loop vertically from above to better facilitate future renovations. Generally wiring from below and horizontal wiring in walls to be avoided unless indicated.
- .5 Branch circuit wiring for surge suppression receptacles and permanently wired computer and electronic equipment to be 2-wire circuits only, i.e. common neutrals not permitted.
- .6 Provide numbered wire collars for control wiring. Numbers to correspond to control shop drawing legend. Obtain wiring diagram for control wiring.

3.3 Installation of building wires

- .1 Install wiring as follows:
 - .1 In conduit systems in accordance with Section 26 05 34 - Conduits, Conduit Fastenings and Conduit Fittings.

3.4 Installation of armoured cables

- .1 Group cables wherever possible on channels.

3.5 Installation of control cables

- .1 Install control cables in conduit.
- .2 Ground control cable shield.

End of Section

Part 1 General

1.1 Reference standards

- .1 American National Standards Institute/Institute of Electrical and Electronics Engineers (ANSI/IEEE)
 - .1 ANSI/IEEE C62.41-1991, Practice on Surge Voltages in Low-Voltage AC Power Circuits.
- .2 Underwriters' Laboratories of Canada (ULC)

1.2 Action and informational submittals

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for secondary lighting arresters and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:

1.3 Closeout submittals

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for secondary lighting arresters for incorporation into manual.

1.4 Delivery, storage and handling

- .1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect secondary lighting arresters from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.

Part 2 Products

2.1 Equipment

- .1 Arrester component parts: to ANSI/IEEE C62.41 and UL 1449.
- .2 Arrester characteristics:
 - .1 System voltage: 120/208V and 347/600V 3Phase.
 - .2 Rated voltage of arrester: 650 V.
 - .3 Indoor type.

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 secondary lightning arresters 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 Installation

- .1 Install arresters and connect to secondary bus and ground bus.

3.3 Cleaning

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

End of Section

Part 1 General

1.1 Reference standards

- .1 American National Standards Institute/Institute of Electrical and Electronics Engineers (ANSI/IEEE)
- .2 CSA Group (CSA)
- .3 ICES-005-18, Radio Frequency Lighting Devices.
- .4 Underwriters' Laboratories of Canada (ULC)

1.2 Action and informational 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, physical size, finish and limitations.
- .3 Samples:
 - .1 Provide samples as indicated. Install 2 sample fixtures, design will include LED strip lighting fixture 24v with dimmable driver suitable for wet locations and Lutron MRF2-6ND-120 dimmable switches in mock-up ceiling. Do not include cost of mock-up in project price. Locate mock-up on site.
- .4 Quality assurance submittals: provide following in accordance with Section 01 45 00 - Quality Control.
 - .1 Manufacturer's instructions: provide manufacturer's written installation instructions and special handling criteria, installation sequence, cleaning procedures and compatibility schedules.

1.3 Quality assurance

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

1.4 Delivery, storage and handling

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Deliver materials to site in original factory packaging, labelled with manufacturer's name, address.

Part 2 Products

2.1 Finishes

- .1 Light fixture finish and construction to meet ULC listings and CSA certifications related to intended installation.

2.2 Optical control devices

- .1 As indicated in luminaire schedule.

2.3 Luminaires

- .1 LED Lighting strip:
 - .1 Voltage: 24V DC;
 - .2 Watt Foot (300mm): 5.5W;
 - .3 Lumen output: 540 - 680 Lum/Foot (30.5cm);
 - .4 Max Length: 5 Meters ;
 - .5 Lamp Life: > 35,000 hours;
 - .6 Operating Temperature: -25 to +40 Celsius degree .
- .2 45 Degree anodized aluminum channel which allows for a 45 degree mounting of LED Lighting strip, with Polycarbonate Lenses.
- .3 Dimmable Driver Class 2:
 - .1 Suitable for LED lighting;
 - .2 Power Factor > 0.98;
 - .3 High efficiency >86% ;
 - .4 Protection: Short circuit / Over loading/ Over temperature;
 - .5 Suitable for use damp and wet indoor locations;
 - .6 Compatible with Lutron MRF2-6ND-120 dimmer;
 - .7 Flicker-free dimming;
 - .8 Full protection aluminum housing;
 - .9 Operating Temperature: -40 to +40 Celsius degree .

Part 3 Execution

3.1 Installation

- .1 Locate and install luminaires as indicated.
- .2 Confirm with Departmental Representative before any invasive procedure on building components if not indicated on the drawings.
- .3 Provide adequate support to suit ceiling system.
- .4 Maintain integrity of building historic components: plaster ceilings, walls and floors, etc.

3.2 Wiring

- .1 Connect luminaires to lighting circuits:
 - .1 Install flexible or rigid conduit for luminaires as indicated.

3.3 Luminaire supports

- .1 Ensure luminaire hardware is appropriate for plaster ceiling installations.

3.4 Cleaning

- .1 Clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.

End of Section