



**Project Manual**

**For**

**KEJIMKUJIK NATIONAL PARK  
Administration Heating System**

**Kejimkujik National Park and  
National Historic Site of Canada  
Maitland Bridge  
Nova Scotia**

**ISSUED FOR TENDER  
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<b>1.0</b>	<b>SUMMARY OF WORK</b>	
.1	The Work includes mechanical and related work as indicated on Drawings at Kejimkujik National Park and National Historic Site of Canada, Maitland Bridge, Nova Scotia.	
<b>1.1</b>	<b>WORK RESTRICTIONS</b>	
.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 local, provincial, and other regulations.	
.2	The Kejimkujik National Park and National Historic Site of Canada is of national significance. Damage to the site is not permitted, and all damage shall be repaired and restored to original or better condition at the direction and sole approval of the Departmental Representative. Reparations, if required, shall be at the sole expense of the Contractor.	
.3	Building Smoking Restrictions	
.1	Smoking is not allowed anywhere on the property.	

## 1.2 PAYMENT PROCEDURES FOR TESTING

- .1 Related Requirements Specified Elsewhere:
  - .1 Particular requirements for inspection and testing to be carried out by testing laboratory designated by Departmental Representative are specified under various technical Sections.
- .2 Appointment and Payment:
  - .1 Departmental Representative will appoint and pay for services of testing laboratory, except follows:
    - .1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.
    - .2 Inspection and testing performed exclusively for Contractor's convenience.
    - .3 Testing, adjustment and balancing of conveying systems, mechanical and electrical equipment and systems.
    - .4 Mill tests and certificates of compliance.
    - .5 Tests specified to be carried out by Contractor under the supervision of Departmental Representative.
  - .2 Where tests or inspections by designated testing laboratory reveal Work not in accordance with contract requirements, pay costs for additional tests or inspections as required by Departmental Representative to verify acceptability of corrected work.
- .3 Contractor's Responsibilities
  - .1 Provide labour, equipment, and facilities to:
    - .1 Provide access to Work for inspection and testing.
    - .2 Facilitate inspections and tests.
    - .3 Make good Work disturbed by inspection and test.
    - .4 Provide storage on site for laboratory's exclusive use to store equipment and cure test samples.
  - .2 Notify Departmental Representative sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test.
  - .3 Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.
  - .4 Pay costs for uncovering and making good Work that is covered before required inspection or testing is completed and approved by Departmental Representative.

## 1.3 PROJECT MEETINGS

- .1 Preconstruction Meeting:
  - .1 Within two weeks after award of Contract, hold a ½-day meeting to discuss construction strategies and procedure.
  - .2 Departmental Representative, Contractor, major Trade Contractors, suppliers listed in bid form, field inspectors and supervisors shall be in attendance.
  - .3 Coordinate time and location of meeting and notify parties concerned minimum 5 days before meeting.
  - .4 Agenda to include:
    - .1 Appointment of official representative of participants in the Work.
    - .2 Schedule of Work: in accordance with CONSTRUCTION SCHEDULE.
    - .3 Schedule of submission of shop drawings, samples, colour chips.

- .4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with CONSTRUCTION FACILITIES.
  - .5 Delivery schedule of specified equipment.
  - .6 Site safety and security in accordance with TEMPORARY BARRIERS AND ENCLOSURES.
  - .7 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
  - .8 Departmental Representative-provided products and salvaged items as indicated on drawings.
  - .9 As-built drawings.
  - .10 Maintenance manuals in accordance with CLOSEOUT SUBMITTALS.
  - .11 Take-over procedures, acceptance, warranties in accordance with Closeout Submittals.
  - .12 Monthly progress claims, administrative procedures, holdbacks.
  - .13 Appointment of inspection and testing agencies or firms.
  - .14 Insurances, transcript of policies.
- .2 Progress Meetings:
- .1 During course of Work schedule progress meetings to coincide with mock-up and other site reviews, as follows:
    - .1 Departmental Representative's trips to site shall coincide with review of critical installation review junctures and mock-up reviews. Coordinate mock-up reviews and site construction reviews to maximize review time efficiency, and minimize visits by strategic planning and coordination.
    - .2 Prepare as many mock-ups for a single review visit as practical.
    - .3 Coordinate mock-up reviews to the extent possible with reviews of pre-foundation pour, and other elements of construction requiring review before being covered or other construction proceeding. Refer to individual sections for review requirements.
  - .2 Contractor, major Trade Contractors involved in the project, and Departmental Representative shall be in attendance.
  - .3 Notify parties minimum 5 days prior to meetings.
  - .4 Contractor shall record minutes of meetings and circulate to attending parties and affected parties not in attendance within 5 working 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 that 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.

## 1.4 CONSTRUCTION SCHEDULE

- .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. Preferably, derive Bar Chart using commercially available computerized project management software.
  - .3 Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.
  - .4 Construction Work Week: Monday to Friday, inclusive, will provide five-day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.
  - .5 Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.
  - .6 Master Plan: summary-level schedule that identifies major activities and key milestones.
  - .7 Milestone: significant event in project, usually completion of major deliverable.
  - .8 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.
  - .9 Project Planning, Monitoring, and Control System: overall system operated by Departmental Representative to enable monitoring of project work in relation to established milestones.
- .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 period.
  - .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, Substantial Performance and Final Completion as defined times of completion are required.
- .3 Submittals:
  - .1 Provide submittals in accordance with SUBMITTAL PROCEDURES.
  - .2 Submit to Departmental Representative within 15 working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring, and reporting of project progress.

- .4 Project Schedule:
  - .1 Develop detailed Project Schedule derived from the Contract Documents.
  - .2 Ensure detailed Project Schedule includes Phases and milestones that reflect the work breakdown structure (WBS) for each Phase, along with the logical progression of the Work by trade jurisdiction.
  - .3 Submit WBS for review and approval to Departmental Representative within 15 days of Award of Contract.
- .5 Project Schedule Reporting:
  - .1 Update Project Schedule every two weeks 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.
- .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.

## 1.5 SUBMITTAL PROCEDURES

- .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 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. Submittals not stamped, signed, dated, and identified as to specific project will be returned without being examined and considered rejected.
  - .4 Notify Departmental Representative in writing at time of submission, identifying deviations from requirements of Contract stating reasons for deviations.
  - .5 Verify field measurements and affected adjacent Work are coordinated.
  - .6 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
  - .7 Contractor's responsibility for deviations in submission from requirements of Contract is not relieved by Departmental Representative review.
- .2 Shop Drawings and Product Data:
  - .1 The term 'shop drawings' means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data that are to be provided by Contractor to illustrate details of a portion of Work.
  - .2 As may be required in specification Sections, submit shop drawings bearing stamp and signature of qualified professional engineer registered or licensed in Province of Nova Scotia, Canada.

- .3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes, and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .4 Allow 7 working days for Departmental Representative's review of each submission.
- .5 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.
- .6 Make changes in shop drawings as Departmental Representative may require, consistent with Contract. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
- .7 Accompany submissions with transmittal letter, containing:
  - .1 Date.
  - .2 Project title and number.
  - .3 Contractor's name and address.
  - .4 Specification sections and indication of partial or complete submittal for stated section
  - .5 Other pertinent data.
- .8 Submissions include:
  - .1 Date and revision dates.
  - .2 Project title and number.
  - .3 Name and address of:
    - .1 Subcontractor.
    - .2 Supplier.
    - .3 Manufacturer.
  - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract.
  - .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 Single line and schematic diagrams.
    - .9 Relationship to adjacent work.
- .9 After Departmental Representative's review, distribute copies.
- .10 Submit electronic copy of shop drawings for each requirement requested, except where hand drawn copies are produced or colours have to be chosen or confirmed, in specification Sections and as Departmental Representative may reasonably request.

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- .11 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.
  - .12 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.
  - .13 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.
  - .14 Submit electronic copies of manufacturer's 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.
  - .15 Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.
    - .1 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 is for sole purpose of ascertaining conformance with general concept.
    - .1 This review shall not mean that the 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.

- .2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.
- .3 Samples/brochures for colour or texture:
  - .1 Submit for review samples in duplicate or as required in respective specification Sections. Label samples with origin and intended use.
  - .2 Deliver samples prepaid to Departmental Representative's business address.
  - .3 Notify Departmental Representative in writing, at time of submission of deviations in samples from requirements of Contract.
  - .4 Where colour, pattern, or texture is criterion, submit full range of samples.
  - .5 Adjustments made on samples 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.
  - .6 Make changes in samples that Departmental Representative may require, consistent with Contract.
  - .7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.
- .4 Certificates and Transcripts:
  - .1 Immediately after award of Contract, submit Workers' Compensation Board status.
  - .2 Submit transcription of insurance immediately after award of Contract.

## 1.6 HEALTH AND SAFETY

- .1 Responsibility for Work Site Safety - This Contractor Is "Principal Contractor":
  - .1 The Contractor shall, for the purposes of the Occupational Health and Safety Act (Nova Scotia), and for the duration of the Work of this Contract:
    - .1 Be the "Principal Contractor" for the "Work Site", and
    - .2 Meet all requirements of the Occupational Health and Safety Act and Regulations, Workers Compensation Board legislation, the Fire Code legislation and all other applicable laws that govern workplace safety.
  - .2 The Contractor shall direct all Subcontractors, sub-subcontractors, Other Contractors, employees, suppliers, workers and any other persons at the "Work Site" on safety related matters, to the extent required to fulfill its "Principal Contractor" responsibilities pursuant to the Act, regardless of:
    - .1 Whether or not any contractual relationship exists between the Contractor and any of these entities, and
    - .2 Whether or not such entities have been specifically identified in this Contract.
  - .3 Safety Certification: Safety certification is a condition of contract award; Contractor is required to maintain a valid Certificate of Recognition (COR) for the duration of the Work of this Contract.
- .2 References:
  - .1 Health Canada/Workplace Hazardous Materials Information System (WHMIS):
    - .1 Material Safety Data Sheets (MSDS).
  - .2 Province of Nova Scotia:
    - .1 Occupational Health and Safety Act, Workplace Hazardous Materials Information System Regulations, Occupational Safety General Regulations.

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- .3 Submittals:
    - .1 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
      - .1 Results of site-specific safety hazard assessment.
      - .2 Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.
    - .2 Submit 2 copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative and authority having jurisdiction, weekly.
    - .3 Submit copies of reports or directions issued by Federal and Provincial health and safety inspectors.
    - .4 Submit copies of incident and accident reports.
    - .5 Submit WHMIS MSDS - Material Safety Data Sheets.
  - .4 Filing of Notice:
    - .1 File Notification of Construction Project with Provincial authorities prior to beginning of Work.
  - .5 Safety Assessment:
    - .1 Perform site-specific safety hazard assessment related to project.
  - .6 Meetings:
    - .1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work.
  - .7 Regulatory Requirements:
    - .1 Do Work in accordance with REGULATORY REQUIREMENTS.
  - .8 General Requirements:
    - .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
    - .2 Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.
  - .9 Responsibility:
    - .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
    - .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.
  - .10 Compliance Requirements:
    - .1 Comply with Occupational Health and Safety Act, Occupational Safety General Regulations, Nova Scotia.

- .11 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.
- .12 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 site-related working experience specific to activities.
    - .2 Have working knowledge of occupational safety and health regulations.
    - .3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
    - .4 Be responsible for implementing, enforcing daily, and monitoring site-specific Contractor's Health and Safety Plan.
    - .5 Be on site during execution of Work and report directly to and be under direction of site supervisor.
- .13 Posting of Documents:
  - .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province having jurisdiction, and in consultation with Departmental Representative.
- .14 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.
- .15 Powder Actuated Devices:
  - .1 Use powder actuated devices only after receipt of written permission from Departmental Representative.
- .16 Work Stoppage:
  - .1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

## 1.7 REGULATORY REQUIREMENTS

- .1 Parks Canada:
  - .1 Perform Work in compliance with the recommendations of "*Standards and Guidelines for the Conservation of Historic Places in Canada*," second edition, © Her Majesty the Queen in Right of Canada, 2010.
- .2 References and Codes:
  - .1 Perform Work in accordance with the National Building Code of Canada, 2010, and the Nova Scotia Building Code Regulations (2014) including amendments up to bid closing date, and other codes of federal, provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply. Conflicts or discrepancies shall be resolved at the sole and final discretion of the Departmental Representative.

- .2 Meet or exceed requirements of:
  - .1 Contract documents.
  - .2 Specified standards, codes, and referenced documents.
- .3 Municipalities:
  - .1 Perform Work in accordance with the by-laws and ordinances of the Municipality in the jurisdiction of the Work and to the direction of the *authorities having jurisdiction*.

## 1.8 QUALITY CONTROL

- .1 Definitions:
  - .1 Corrective Action: Steps that are taken to remove the causes of an existing non-conformity or undesirable situation. The corrective action process is designed to prevent the recurrence of non-conformities or undesirable situations. It tries to make sure that existing non-conformities and situations do not happen again. It tries to prevent recurrence by eliminating causes.
  - .2 Hold Point: A mandatory verification point beyond which a Work Process cannot proceed without authorization by Departmental Representative. Hold Points may be nominated by Departmental Representative. The issuance of a Non-Conformance or Corrective Action report by Departmental Representative automatically creates a Hold Point for the Work Processes affected.
  - .3 Non-Conformance: When one or more characteristics of an installation fail to meet specified requirements, it is referred to as Non-conformance. When an installation deviates from specified requirements, it fails to conform. Non-conformance must be identified and rectified.
- .2 Inspection:
  - .1 Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
  - .2 Give timely notice requesting inspection if Work is designated for special tests, inspections, or approvals by Departmental Representative instructions, or law of Place of Work.
  - .3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections, or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
  - .4 Departmental Representative will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Departmental Representative shall pay cost of examination and replacement.
- .3 Independent Inspection Agencies:
  - .1 Independent Inspection/Testing Agencies will be selected by Departmental Representative for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Departmental Representative.
  - .2 Provide equipment required for executing inspection and testing by appointed agencies.
  - .3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.

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- .4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative, Pay costs for retesting and re-inspection.
  - .4 Access to Work:
    - .1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.
    - .2 Cooperate to provide reasonable facilities for such access.
  - .5 Procedures:
    - .1 Notify appropriate agency in advance of requirement for tests, in order that attendance arrangements can be made.
    - .2 Submit samples 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.
  - .6 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 Make good other Contractor's work damaged by such removals or replacements promptly.
    - .3 If, in 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.
  - .7 Reports:
    - .1 Submit electronic copies of inspection and test reports to Departmental Representative.
    - .2 Provide copies to subcontractor of work being inspected or tested and manufacturer or fabricator of material being inspected or tested.
  - .8 Tests and Mix Designs:
    - .1 Furnish test results and mix designs as requested.
    - .2 Cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised by Departmental Representative and may be authorized as recoverable.
  - .9 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 or as specified in specific Section.
    - .3 Prepare mock-ups for Departmental Representative's 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 because of such default will be allowed.
- .5 If requested, Departmental Representative will assist in preparing schedule, fixing dates for preparation.
- .6 Remove mock-up at conclusion of Work or when acceptable to Departmental Representative.
- .7 Mock-ups may remain as part of Work.
- .8 Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.
- .10 Mill Tests:
  - .1 Submit mill test certificates as requested or required of specification Sections.
- .11 Equipment and Systems:
  - .1 Submit adjustment and balancing reports for mechanical, electrical, and building equipment systems.

## **1.9 TEMPORARY UTILITIES**

- .1 References:
  - .1 National Building Code of Canada 2010
    - .1 Part 8 Safety Measures and Construction and Demolition Sites.
  - .2 National Fire Code of Canada 2010
    - .1 Part 5 Hazardous Processes and Operations.
  - .3 Canadian Standards Association (CSA International)
    - .1 CSA S350-M1980(R2003), Code of Practice for Safety in Demolition of Structures.
- .2 Installation and Removal:
  - .1 Provide temporary utilities controls in order to execute work expeditiously.
  - .2 Remove from site all such work after use.
- .3 Water Supply:
  - .1 Provide continuous supply of potable water for construction use.
  - .2 Pay for utility charges at prevailing rates.
  - .3 Arrange for connection with appropriate utility company and pay costs for installation, maintenance, and removal.
- .4 Temporary Heating and Ventilation:
  - .1 Provide and pay for temporary heating required during construction period, including attendance, maintenance and fuel.
  - .2 Construction heaters used inside building must be vented to outside or be non-flameless type. Solid fuel salamanders are not permitted.
  - .3 Provide temporary heat and ventilation in enclosed areas as required to:
    - .1 Facilitate progress of Work.
    - .2 Protect Work and products against dampness and cold.
    - .3 Prevent moisture condensation on surfaces.
    - .4 Provide ambient temperatures and humidity levels for storage, installation and curing of materials.
    - .5 Provide adequate ventilation to meet health regulations for safe working environment.

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- .4 Maintain temperatures of minimum 10 degrees C in areas where construction is in progress.
  - .5 Ventilating:
    - .1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.
    - .2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.
    - .3 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.
    - .4 Ventilate storage spaces containing hazardous or volatile materials.
    - .5 Ventilate temporary sanitary facilities.
    - .6 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.
  - .6 Maintain strict supervision of operation of temporary heating and ventilating equipment to:
    - .1 Conform with applicable codes and standards.
    - .2 Enforce safe practices.
    - .3 Prevent abuse of services.
    - .4 Prevent damage to finishes.
    - .5 Vent direct-fired combustion units to outside.
  - .7 Permanent heating system of building, not to be used unless authorized in writing by the Departmental Representative. Be responsible for damage to heating system if use is permitted.
  - .8 On completion of Work for which permanent heating system is used, replace filters and replace bearing. Thoroughly clean permanent equipment used during construction.
  - .9 Ensure Date of Substantial Performance and Warranties for heating system do not commence until entire system is in as near original condition as possible and is certified by Departmental Representative.
  - .10 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.
  - .5 Temporary Power and Light:
    - .1 Provide and pay for temporary power during construction for temporary lighting and operating of power tools and equipment as required.
    - .2 Arrange for connection with appropriate utility company. Pay costs for installation, maintenance and removal.
    - .3 Temporary power for electric cranes and other equipment requiring in excess of above is responsibility of Departmental Representative.
    - .4 Provide and maintain temporary lighting throughout project. Ensure level of illumination on all floors and stairs is not less than 162 lx.
    - .5 Electrical power and lighting systems installed under this Contract may be used for construction requirements only with prior approval of Departmental Representative provided that guarantees are not affected. Make good damage to electrical system caused by use under this Contract. Replace lamps which have been used for more than 3 months.
  - .6 Temporary Communication Facilities:
    - .1 Provide and pay for temporary telephone, fax, and data hook up lines and equipment as required.

- .7 Fire Protection:
  - .1 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction and governing codes, regulations and bylaws.

## **1.10 CONSTRUCTION FACILITIES**

- .1 Scaffolding:
  - .1 Scaffolding: to CAN/CSA S269.2-M87 (R2003) - Access Scaffolding for Construction Purposes.
  - .2 Provide and maintain scaffolding, ramps, ladders, platforms, and temporary stairs.
- .2 Hoisting:
  - .1 Provide, operate, and maintain hoists required for moving of materials and equipment. Make financial arrangements with Subcontractors for their use of hoists.
  - .2 Hoists to be operated by qualified operator.
- .3 Site Storage/Loading:
  - .1 Confine work and operations of employees by Contract Documents. Do not encumber premises with products.
  - .2 Do not load or permit to load any part of Work with weight or force that will endanger Work.
- .4 Construction Parking:
  - .1 Parking will be permitted on site.
  - .2 Provide and maintain adequate access to project site.
- .5 Security:
  - .1 The Contractor is responsible for the security and safety of the site and building for the duration of the Contract.
  - .2 Provide fencing and additional security as deemed necessary.
- .6 Offices:
  - .1 Provide office heated to 22 degrees C, lighted 750 lx and ventilated, of sufficient size to accommodate site meetings and furnished with drawing laydown table.
  - .2 Provide marked and fully stocked first-aid case in a readily available location.
  - .3 Subcontractors to provide their own offices as necessary. Direct location of these offices.
  - .4 The area of Work is available at Contractor's option for project administrative use.
- .7 Equipment, Tool and Materials Storage:
  - .1 Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment, and materials.
  - .2 Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with work activities.
- .8 Sanitary Facilities:
  - .1 Provide temporary sanitary facilities for work force in accordance with governing regulations and ordinances.
  - .2 Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.

- .3 When permanent water and drain connections are completed, provide temporary water closets and urinals complete with temporary enclosures, inside building. Permanent facilities may be used on approval of Departmental Representative.
- .9 Construction Signage:
  - .1 Submit Shop Drawing of sign for approval prior to ordering.
  - .2 Provide and erect project sign, within three weeks of signing Contract, in a location designated by Departmental Representative.
  - .3 Indicate on sign, name of Departmental Representative and Contractor of design style established by Departmental Representative.
  - .4 No other signs or advertisements, other than warning signs, are permitted on site.
- .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 Protect travelling public from damage to person and property.
  - .3 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.
  - .4 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.
  - .5 Dust control: adequate to ensure safe operation at all times.
  - .6 Provide snow removal during period of Work.
- .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.

#### **1.11 TEMPORARY BARRIERS AND ENCLOSURES**

- .1 Installation and Removal:
  - .1 Provide temporary controls in order to execute Work expeditiously.
  - .2 Remove from site all such work after use.
- .2 Weather Enclosures:
  - .1 Provide weather tight closures to unfinished door and window openings, tops of shafts and other openings in floors and roofs.
  - .2 Close off floor areas where walls are not finished; seal off other openings; enclose building interior work for temporary heat.
  - .3 Design enclosures to withstand wind pressure and snow loading.
- .3 Dust Tight Screens:
  - .1 Provide dust tight screens or partitions to localize dust generating activities, and for protection of workers, finished areas of Work and public.
  - .2 Maintain and relocate protection until such work is complete.

- .4 Access to Site:
  - .1 Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work.
- .5 Fire Routes and Exits:
  - .1 Maintain access to property including overhead clearances for use by emergency response vehicles.
- .6 Protection of Off-Site and Public Property:
  - .1 Protect surrounding private and public property from damage during performance of Work.
  - .2 Be responsible for damage incurred.
- .7 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 Be responsible for damage incurred due to lack of or improper protection.

## 1.12 COMMON PRODUCT REQUIREMENTS

- .1 References:
  - .1 Within text of each specifications section, reference may be made to reference standards.
  - .2 Conform to these reference standards, in whole or in part as specifically requested in specifications.
  - .3 If there is question as to whether products or systems are in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested or to receive test data.
  - .4 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.
- .2 Quality:
  - .1 Products, materials, equipment, and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source, and quality of products provided.
  - .2 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
  - .3 Should disputes arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.
  - .4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
  - .5 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

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- .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 reviewed for possible authorization 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.
- .4 Storage, Handling and Protection:
- .1 Handle and store products in manner to prevent damage, adulteration, deterioration, and soiling and in accordance with manufacturer's instructions when applicable.
  - .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
  - .3 Store products subject to damage from weather in weatherproof enclosures.
  - .4 Store cementitious products clear of earth or concrete floors, and away from walls.
  - .5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
  - .6 Store sheet materials, lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.
  - .7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
  - .8 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.
  - .9 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over nameplates.
- .5 Transportation:
- .1 Pay costs of transportation of products required in performance of Work.
- .6 Manufacturer's Instructions:
- .1 Unless otherwise indicated in the 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.
- .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 his or her required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.

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- .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative, whose decision is final.
  - .8 Coordination:
    - .1 Ensure cooperation of workers in laying out Work. Maintain efficient and continuous supervision.
    - .2 Be responsible for coordination and placement of openings, sleeves, and accessories.
  - .9 Concealment:
    - .1 In finished areas, conceal pipes, ducts and wiring in floors, walls, and ceilings, except where indicated otherwise.
    - .2 Before installation, inform Departmental Representative if there is interference. Install as directed by Departmental Representative.
  - .10 Remedial Work:
    - .1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Coordinate adjacent affected Work as required.
    - .2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.
  - .11 Location of Fixtures:
    - .1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.
    - .2 Inform Departmental Representative of conflicting installation. Install as directed.
  - .12 Fasteners:
    - .1 Fasteners used for exterior applications or at the exterior shell of buildings shall be SAE No. 304 stainless steel.
    - .2 Provide metal fastenings and accessories in same texture, colour, and finish as adjacent materials, unless indicated otherwise.
    - .3 Prevent electrolytic action between dissimilar metals and materials.
    - .4 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.
    - .5 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.
    - .6 Keep exposed fastenings to a minimum, space evenly and install neatly.
    - .7 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.
  - .13 Fasteners – 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 SAE 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.

- .14 Protection of Work in Progress:
  - .1 Prevent overloading of parts of building. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated without written approval of Departmental Representative.
- .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.
  - .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.

### 1.13 PRODUCT OPTIONS AND SUBSTITUTIONS

- .1 Definitions:
  - .1 Acceptable Materials: The term Acceptable Materials is used to specify products by trade name, manufacturer, catalogue number, model number, or similar reference, and is used within the Project Manual as follows:
    - .1 Acceptable Materials listings are based on Departmental Representative's determination that materials meet specified requirements and opinion of applicability to the project requirements.
    - .2 Acceptable Materials listings are deemed to establish the standard of acceptance that Departmental Representative will consider appropriate for the Work.
    - .3 Any product listed in the Acceptable Materials listing may be used to establish the Bid Price, unless an Addendum is issued adding additional Acceptable Materials.
  - .2 Basis-of-Design Materials: The term Basis-of-Design Materials is used to specify a specific material name, manufacturer, catalogue number, model number, or similar reference and is used as follows:
    - .1 Basis-of-Design Materials are used to establish Departmental Representative's preference for a product based on performance, appearance, or configuration.
    - .2 Use the Basis-of-Design Material to establish the Bid Price, unless an Addendum is issued adding additional Acceptable Materials.
  - .3 Non-proprietary specification means a specification that includes descriptive, reference standard, or performance requirements, or any combination thereof, but does not include proprietary names of products or manufacturers.
  - .4 Substitution means a proposal from a Contractor to provide a product, material, or item of equipment not specified in the Contract documents but functionally equivalent and readily exchangeable to a specified item; for consideration by Departmental Representative and Departmental Representative.
- .2 Submittals:
  - .1 When requested by Departmental Representative, submit complete data substantiating compliance of a product with requirements of Contract Documents. Include the following:
    - .2 Product identification, including manufacturer's name and address.
    - .3 Written verification that the substitute products can be obtained, meet the performance required for the project, and meet requirements of the Nova Scotia Building Code Regulations (2013).

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- .4 Manufacturer's literature providing product description, applicable reference standards, and performance and test data.
  - .5 Samples, as applicable.
  - .6 Name and address of projects on which product has been used and date of each installation.
  - .7 For substitutions and requests for changes to accepted products, include in addition to the above, the following:
    - .1 Itemized comparison of substitution with named product(s). List significant variations.
    - .2 Designation of availability of maintenance services and sources of replacement materials.
  - .3 Product Options:
    - .1 For products specified by non-proprietary specification:
      - .1 Select any product, assembly, or material that meets or exceeds the specified standards for products specified only by referenced standards and performance criteria.
    - .2 Acceptable Materials: Select any named product, assembly, or material contained in the listing of Acceptable Materials, unless an addendum is issued indicating acceptance of additional Acceptable Materials.
    - .3 Basis-of-Design Materials: Use the named product contained in the Basis-of-Design Material listing, unless an addendum is issued indicating acceptance of additional Acceptable Materials.
  - .4 Substitutions:
    - .1 Contractor will assemble requests for substitutions requested by subcontractors and submit to Departmental Representative for review.
    - .2 Departmental Representative will review proposed substitute products for acceptability only when submitted by Contractor; Departmental Representative will not review requests submitted independently by subcontractors.
    - .3 No substitutions will be permitted without Departmental Representative's written acceptance; Contractor will be required to remove products and replace with specified materials or provide a credit to the value of the contract at Departmental Representative's discretion where substitutions are found in the Work that have not been formally accepted by Departmental Representative and Departmental Representative.
    - .4 Departmental Representative is not obliged to accept any Proposed Substitution offered by Contractor, and reserves the right to dismiss any item with no further explanation.
    - .5 Substitute Products: Where substitute products are permitted, unnamed products may be accepted by Departmental Representative, subject to the following:
      - .1 Substitute products shall be the same type as, be capable of performing the same functions as, and meet or exceed the standards of quality and performance of the named product(s). Substitutions shall not require revisions to Contract Documents nor to work of Other Contractors.
    - .6 Substitute Manufacturers: Where substitute manufacturers are permitted, unnamed manufacturers may be accepted by Departmental Representative, subject to the following:
      - .1 Substitute manufacturers shall have capabilities comparable to those of the named manufacturer(s). Substitutions shall not require revisions to Contract Documents nor to work of Other Contractors.

- .7 In making a proposal for substitution the Contractor represents:
  - .1 That they have personally investigated the proposal and (unless the proposal explicitly states otherwise) determined that it performs in a similar way or is superior to the product or method specified.
  - .2 That the same guaranty will be furnished as for the originally specified product or construction method.
  - .3 That they will coordinate installation of the accepted substitute into the Work, making such changes in the Work as may be required to accommodate the change.
  - .4 That they will bear costs and waives claims for additional compensation for costs and time that subsequently become apparent arising out of the substitution.

#### **1.14 EXAMINATION AND PREPARATION**

- .1 Existing Services:
  - .1 Before commencing work, establish location and extent of service lines in area of Work and notify Departmental Representative of findings.
  - .2 Remove abandoned service lines within 2 m of structures. Cap or otherwise seal lines at cut-off points as directed by Departmental Representative.
- .2 Location of Equipment and Fixtures:
  - .1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.
  - .2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.
  - .3 Inform Departmental Representative of impending installation and obtain approval for actual location.
  - .4 Submit field drawings to indicate relative position of various services and equipment when required by Departmental Representative.
- .3 Records:
  - .1 Record locations of maintained, re-routed and abandoned service lines.
- .4 Submittals:
  - .1 Submit name and address of Surveyor to Departmental Representative.
  - .2 On request of Departmental Representative, submit documentation to verify accuracy of field engineering work.
  - .3 Submit certificate signed by surveyor certifying and noting those elevations and locations of completed Work that conform and do not conform with Contract Documents.
- .5 Subsurface Conditions:
  - .1 Promptly notify Departmental Representative in writing if subsurface conditions at Place of Work differ materially from those indicated in Contract Documents, or a reasonable assumption of probable conditions based thereon.
  - .2 After prompt investigation, should Departmental Representative determine that conditions do differ materially, instructions will be issued for changes in Work as provided in Changes and Change Orders.

#### **1.15 EXECUTION**

- .1 Submittals:

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- .1 Submit written request in advance of cutting or alteration that 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.
    - .6 Tenants of occupied portions of building.
  - .2 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 or tenants.
    - .7 Written permission of affected separate contractor.
    - .8 Date and time the Work will be executed.
  - .2 Materials:
    - .1 Required for original installation.
    - .2 Change in Materials: Submit request for substitution in accordance with Submittal Procedures.
  - .3 Preparation:
    - .1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
    - .2 After uncovering, inspect conditions affecting performance of Work.
    - .3 Beginning of cutting or patching means acceptance of existing conditions.
    - .4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.
    - .5 Provide protection from elements for areas that are to be exposed by uncovering work; maintain excavations free of water.
  - .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 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
    - .7 Execute Work by methods to avoid damage to other Work, and that will provide proper surfaces to receive patching and finishing.
    - .8 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.
    - .9 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.

- .10 Restore work with new products in accordance with requirements of Contract Documents.
- .11 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- .12 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with firestopping material, full thickness of the construction element.
- .13 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.
- .14 Conceal pipes, ducts and wiring in floor, wall, and ceiling construction of finished areas except where indicated otherwise.

## 1.16 CLEANING

- .1 Project Cleanliness:
  - .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, including that caused by Departmental Representative or other Contractors.
  - .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
  - .3 Clear snow and ice from access to building, bank/pile snow in designated areas only.
  - .4 Make arrangements with and obtain permits from *authorities having jurisdiction* for disposal of waste and debris.
  - .5 Provide on-site containers for collection of waste materials and debris.
  - .6 Provide and use marked separate bins for recycling. Refer to WASTE MANAGEMENT AND DISPOSAL.
  - .7 Dispose of waste materials and debris off site.
  - .8 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
  - .9 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
  - .10 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
  - .11 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
  - .12 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.
- .2 Final Cleaning:
  - .1 Clean work prior to final review by Departmental Representative.
  - .2 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
  - .3 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
  - .4 Prior to final review remove surplus products, tools, construction machinery and equipment.
  - .5 Remove waste products and debris including that caused by Departmental Representative or other Contractors.

- .6 Remove waste materials from site in accordance with WASTE MANAGEMENT AND DISPOSAL.
- .7 Make arrangements with and obtain permits from *authorities having jurisdiction* for disposal of waste and debris.
- .8 Remove stains, spots, marks, and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and horizontal hard surfaces.
- .9 Clean lighting reflectors, lenses, and other lighting surfaces.
- .10 Inspect finishes, fitments, and equipment and ensure specified workmanship and operation.
- .11 Broom clean and wash exterior walks, steps, and surfaces; rake clean other surfaces of grounds.
- .12 Remove dirt and other disfiguration from exterior surfaces.
- .13 Sweep and wash clean paved areas.
- .14 Clean drainage systems.
- .15 Remove debris and surplus materials from accessible concealed spaces.

### 1.17 WASTE MANAGEMENT AND DISPOSAL

- .1 Waste Management Goals:
  - .1 Prior to start of Work conduct meeting with Departmental Representative to review and discuss Waste Management Plan and Goals.
  - .2 Waste Management Goal is to divert 75% construction and demolition materials considered recyclable from landfill sites, and reduce jobsite waste in compliance with Canadian Construction Association CCA 81 - 2001: A Best Practices Guide to Solid Waste Reduction.
  - .3 Accomplish maximum control of solid construction and demolition waste.
  - .4 Preserve environment and prevent pollution and environment damage.
- .2 Definitions:
  - .1 Recyclable: ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse.
  - .2 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.
  - .3 Recycling: process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
  - .4 Reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes:
    - .1 Returning reusable items including pallets or unused products to vendors.
  - .5 Salvage: removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.
  - .6 Separate Condition: refers to waste sorted into individual types.
  - .7 Source Separation: acts of keeping different types of waste materials separate beginning from first time they became waste.
- .3 Materials Source Separation Program (MSSP):
  - .1 Provide on-site facilities for collection, handling, and storage of anticipated quantities of reusable and recyclable materials.
  - .2 Provide containers to deposit reusable and recyclable materials.

- .3 Locate containers in locations, to facilitate deposit of materials without hindering daily operations.
- .4 Locate separated materials in areas that minimize material damage.
- .5 Collect, handle, store on-site, and transport off-site, salvaged materials in combined condition.
  - .1 Transport to approved and authorized recycling facility.
  - .2 Ship materials to site operating under Certificate of Approval.
  - .3 Materials must be immediately separated into required categories for reuse or recycling.
- .4 Storage, Handling and Protection:
  - .1 Store, materials to be reused, recycled and salvaged in locations as directed by Departmental Representative.
  - .2 Unless specified otherwise, materials for removal become Contractor's property.
  - .3 Protect, stockpile, store and catalogue salvaged items.
  - .4 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.
  - .5 Protect structural components not removed for demolition from movement or damage.
  - .6 Support affected structures. If safety of building is endangered, cease operations and immediately notify Departmental Representative.
  - .7 Protect surface drainage, mechanical and electrical from damage and blockage.
  - .8 Separate and store materials produced during dismantling of structures in designated areas.
  - .9 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated facilities.
    - .1 On-site source separation is recommended.
    - .2 Remove co-mingled materials to off-site processing facility for separation.
- .5 Disposal of Waste:
  - .1 Do not bury rubbish or waste materials.
  - .2 Burning rubbish and construction waste materials is not permitted on site.
  - .3 Do not dispose of waste, volatile materials, mineral spirits, oil, and paint thinner into waterways, storm, or sanitary sewers.
  - .4 Keep records of construction waste including:
    - .1 Number and size of bins.
    - .2 Waste type of each bin.
    - .3 Reused or recycled waste destination.
  - .5 Remove materials from deconstruction as deconstruction/disassembly Work progresses.

## 1.18 CLOSEOUT PROCEDURES

- .1 Inspection and Declaration:
  - .1 Contractor's Inspection: Contractor and Subcontractors: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract.
    - .1 Notify Departmental Representative in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.

- .2 Request Departmental Representative's Field Review.
- .3 Departmental Representative's Field Review: Departmental Representative and Contractor will perform review of Work to identify obvious defects or deficiencies. Contractor to correct Work accordingly.
- .2 Completion: submit written certificate that following have been performed:
  - .1 Work has been completed and inspected for compliance with Contract.
  - .2 Defects have been corrected and deficiencies have been completed.
  - .3 Equipment and systems have been tested, adjusted and balanced and are fully operational.
  - .4 Certificates required by Boiler Inspection Branch, Fire Commissioner, and Utility companies have been submitted.
  - .5 Operation of systems have been demonstrated to Departmental Representative's personnel.
  - .6 Work is complete and ready for final inspection.
- .3 Final Inspection: when items noted above are completed, request final inspection of Work by Departmental Representative, Departmental Representative, and Contractor. If Work is deemed incomplete by Departmental Representative and Departmental Representative complete outstanding items and request re-inspection.
- .4 Declaration of Certificate of Substantial Performance: when Departmental Representative and Departmental Representative consider deficiencies and defects have been corrected and it appears requirements of Contract have been substantially performed, make application for certificate of Substantial Performance.
- .5 Commencement of Lien and Warranty Periods: date of Departmental Representative's acceptance of submitted declaration of Substantial Performance shall be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.
- .6 Final Payment: when Departmental Representative and Departmental Representative consider final deficiencies and defects have been corrected and it appears requirements of Contract have been totally performed, make application for final payment. If Work is deemed incomplete by Departmental Representative and Departmental Representative, complete outstanding items and request re-inspection.
- .7 Payment of Holdback: after issuance of certificate of Substantial Performance, submit an application for payment of holdback amount.
- .2 Cleaning:
  - .1 In accordance with CLEANING.
  - .2 Remove waste and surplus materials, rubbish and construction facilities from the site in accordance with WASTE MANAGEMENT AND DISPOSAL.

#### **1.19 CLOSEOUT SUBMITTALS**

- .1 Submittals in accordance with SUBMITTAL PROCEDURES:
  - .1 Prepare instructions and data using personnel experienced in maintenance and operation of described products.
  - .2 Copy will be returned after final inspection, with Departmental Representative's comments.
  - .3 Revise content of documents as required prior to final submittal.

- .4 Two weeks prior to Substantial Performance, submit to the Departmental Representative, two final copies and one digital version of Operating and Maintenance manuals in English.
  - .5 Ensure spare parts, maintenance materials and special tools provided are new, undamaged or defective, and of same quality and manufacture as products provided in Work.
  - .6 Furnish evidence, if requested, for type, source and quality of products provided.
  - .7 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.
  - .8 Pay costs of transportation.
  - .9 Submit `redline` marked up construction drawings to the Departmental Representative within 30 days of Substantial Performance and prior to Final Completion.
- .2 Operations and Maintenance Manual Format:
- .1 Organize data as instructional manual.
  - .2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.
  - .3 When multiple binders are used correlate data into related consistent groupings. Identify contents of each binder on spine.
  - .4 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.
  - .5 Arrange content by systems, process flow, under Section numbers and sequence of Table of Contents.
  - .6 Provide tabbed flyleaf for each separate product and system, with typed description of product and major component parts of equipment.
  - .7 Text: manufacturer's printed data, or typewritten data.
  - .8 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
  - .9 Provide 1:1 scaled CAD files in dwg format on CD.
- .3 Contents – Each Volume:
- .1 Table of Contents: 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.
  - .4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
  - .5 Typewritten Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

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- .4 As-Built Drawings and Samples:
    - .1 Maintain, in addition to requirements in General Conditions, at site for Departmental Representative one record copy of:
      - .1 Contract Drawings.
      - .2 Specifications.
      - .3 Addenda.
      - .4 Change Orders and other modifications to Contract.
      - .5 Reviewed shop drawings, product data, and samples.
      - .6 Field test records.
      - .7 Inspection certificates.
      - .8 Manufacturer's certificates.
    - .2 Store record documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage.
    - .3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large, printed letters.
    - .4 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.
    - .5 Keep record documents and samples available for inspection by Departmental Representative.
  - .5 Recording Actual Site Conditions:
    - .1 Record information on set of drawings, and in copy of Project Manual, provided by Departmental Representative.
    - .2 Provide felt tip marking pens, maintaining separate colours for each major system, for recording information.
    - .3 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
    - .4 Contract Drawings and shop drawings: mark each item to record actual construction, including:
      - .1 Measured depths of elements of foundation in relation to finish first floor datum.
      - .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
      - .3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
      - .4 Field changes of dimension and detail.
      - .5 Changes made by change orders.
      - .6 Details not on original Contract Drawings.
      - .7 References to related shop drawings and modifications.
    - .5 Specifications: mark each item to record actual construction, including:
      - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
      - .2 Changes made by Addenda and change orders.
    - .6 Other Documents: maintain manufacturer's certifications, inspection certifications, and field test records, required by individual specifications sections.

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- .6 Materials and Finishes:
    - .1 Building Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and colour and texture designations. Provide information for re-ordering custom manufactured products.
    - .2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
    - .3 Moisture-Protection and Weather-Exposed Products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
    - .4 Additional Requirements: as specified in individual specifications sections.
  - .7 Maintenance Materials:
    - .1 Provide maintenance and extra materials, in quantities specified in individual specification sections.
    - .2 Provide items of same manufacture and quality as items in Work.
    - .3 Deliver to site, location as directed; place and store.
    - .4 Receive and catalogue items. Submit inventory listing to Departmental Representative. Include approved listings in Operating and Maintenance Manual.
    - .5 Obtain receipt for delivered products and submit prior to final payment.
  - .8 Special Tools:
    - .1 Provide special tools, in quantities specified in individual specification section.
    - .2 Provide items with tags identifying their associated function and equipment.
    - .3 Deliver to site, location as directed; place and store.
    - .4 Receive and catalogue items. Submit inventory listing to Departmental Representative. Include approved listings in Operating and Maintenance Manual.
  - .9 Storage, Handling and Protection:
    - .1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.
    - .2 Store in original and undamaged condition with manufacturer's seal and labels intact.
    - .3 Store components subject to damage from weather in weatherproof enclosures.
    - .4 Store paints and freezable materials in a heated and ventilated room.
    - .5 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.
  - .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 and submit upon acceptance of work. Organize binder as follows:

- .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
- .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
- .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten 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 Sance is determined.
- .8 Conduct joint 4-month and 9-month warranty inspection, 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 Listing and status of delivery of Certificates of Warranty for extended warranty items, to include roofs, pumps, motors, transformers.
  - .3 Provide list for each warranted equipment, item, feature of construction or system indicating:
    - .1 Name of item.
    - .2 Model and serial numbers.
    - .3 Location where installed.
    - .4 Name and phone numbers of manufacturers or suppliers.
    - .5 Names, addresses and telephone numbers of sources of spare parts.
    - .6 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.
    - .7 Cross-reference to warranty certificates as applicable.
    - .8 Starting point and duration of warranty period.
    - .9 Summary of maintenance procedures required to continue warranty in force.
    - .10 Cross-Reference to specific pertinent Operation and Maintenance manuals.
    - .11 Organization, names and phone numbers of persons to call for warranty service.
    - .12 Typical response time and repair time expected for various warranted equipment.
  - .4 Contractor's plans for attendance at 4-month and 9-month post-construction warranty inspections.
  - .5 Procedure and status of tagging of equipment covered by extended warranties.
  - .6 Post copies of instructions near selected pieces of equipment where operation is critical for warranty and/or safety reasons.

- .10 Respond in a timely manner to oral or written notification of required construction warranty repair work.
- .11 Written verification will follow oral instructions. Failure to respond will be cause for the Departmental Representative to proceed with action against Contractor.
- .11 Pre-Warranty Conference:
  - .1 Meet with Departmental Representative to develop understanding of requirements of this section. Schedule meeting prior to contract completion, and at time designated by Departmental Representative.
  - .2 Departmental Representative will establish communication procedures for:
    - .1 Notification of construction warranty defects.
    - .2 Determine priorities for type of defect.
    - .3 Determine reasonable time for response.
  - .3 Provide name, telephone number and address of licensed and bonded company that is authorized to initiate and pursue construction warranty work action.
  - .4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.
- .12 Equipment Warranty Tags:
  - .1 Tag, at time of installation, each warranted equipment 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 Contractor.

**END OF SECTION**