SPECIFICATION

Channel Head Light Tower Restoration & Associated Work 2015

Channel Head, Port aux Basques, Newfoundland

DFO File # FP802-150062

Prepared for: Fisheries and Oceans Canada

Date: March 1, 2015 (Revision 1)

List of Drawings

APPENDICES:

DRAWING NO.	DRAWING TITLE
1101101D008A1	Existing Floor Plans – Demolition
1101101D008A2	Existing Elevations - Demolition
1101101D008A3	Existing Section – Demolition and New Details
1101101D008A4	New Floor Plans
1101101D008A5	New Elevations and Window Details
1101101D008A6	New Section, Ladder and Floor Framing Details

PART 1 GENERAL

1.1 SECTION INCLUDES

.1 Title and description of Work.

.2 Contractor use of premises.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

.1 Work of this Contract comprises the restoration of the Channel Head light tower in Port Aux Basques, NL. The site is not accessible by land (i.e. only accessible by boat or helicopter). DFO will schedule a site visit during the tender period. The site visit will occur over a one day period with helicopter flights leaving from the Port Aux Basques area to the Site (flight will return to Port Aux Basques - Contractor responsible for all costs associated with getting from home base to Port Aux Basques). Specific meeting location will be clarified at the tender stage. Departmental Representative will pay for helicopter services associated with the one day site visit held during the tender period. Contractors wishing to visit site shall contact the Departmental Representative to obtain flight times/schedule. Note the following:

.1 If weather doesn't permit flying on the scheduled site visit day, it will occur on the following day.

.2 A maximum of 1 person per Contractor will be permitted.

.3 Time allocated on site will be a maximum of 2 hours.

.4 2 days advance notice is to be given to the Departmental Representative with respect to the company and individuals attending the visit.

.5 The Site visit will occur within 8 calendars days after posting of the project.

.2 In general, the work consists of the following:

.1 Removal of the existing paint from the surfaces of the light tower (interior and exterior). See subsection 1.2.3 and specification section 02 82 13.

.2 Removal and replacement of the glazing in the lantern room.

.3 Removal and replacement of all the ladders/rails/landings. The exterior railing associated with the catwalk are to remain.

.4 Removal and replacement of the existing windows.

.5 Removal and replacement of the exterior steel door and hardware for the attached shed.

.6 Repainting of the tower (all interior and exterior surfaces).

.7 Removal and replacement of the wood siding and shingles on the attached shed.

.3 Contractors are to note that lead paint is present on the interior and exterior of the light tower (all surfaces) and attached shed. The paint has been sampled (see Appendix B), and is classified as hazardous waste for the purposes of transportation and disposal (as leachate levels exceed landfill disposal guidelines). All paint chips/flakes and spent abrasives (used to remove the paint), are to be considered hazardous waste. The Contractor will be expected to set-up a decontamination facility, enclose the work area and install negative air units for all paint removal activities (reference Section 02 82 13).

.3 Pictures of the infrastructure to be removed are attached to the technical specifications, as Appendix A.

1.3 CONTRACTOR USE OF PREMISES

.1 Contractor has unrestricted use of site.

.2 Coordinate use of premises under direction of Engineer.

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

1.4 ON-SITE DOCUMENTS

.1 Maintain at job site documents as indicated in Section 01 31 00 – Project Management and Coordination.

1.5 HELICOPTER USE

.1 Should the Contractor choose to use a helicopter for work activities, proper slinging is to be used. All air lifts of material and equipment shall be with the use of slinging nets complete with inner liner which has been attached to the slinging nets. All nets being used must be transport approved for helicopter slinging operations. All staff must be trained in Helicopter slinging operations. The flight path shall avoid over salmon rivers if possible. The refueling of helicopters must be completed at approved locations and never near a water body. All helicopter costs are the responsibility of the Contractor.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

.1 Coordination work with other contractors and subcontractors under administration of Engineer.

.2 Scheduled project meetings.

1.2 RELATED SECTIONS

.1 Section 01 11 00 - Summary of Work.

1.3 DESCRIPTION

.1 Coordination of progress schedules, submittals, use of site, temporary utilities, construction facilities, and construction Work, with progress of Work of other contractors and subcontractors under instructions of Engineer.

1.4 PROJECT MEETINGS

.1 Project meetings to be held at times and locations as determined by Engineer.

.2 Engineer will arrange project meetings and record and distribute minutes.

1.5 CONSTRUCTION ORGANIZATION AND START-UP

.1 Within 10 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.

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

.3 Agenda to include following:

.1 Appointment of official representative of participants in Work.

.2 Schedule of Work, progress scheduling in accordance with Section 01 32 00 - Construction Progress Documentation.

.3 Schedule of submission of shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

.4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 51 00 - Temporary Utilities.

.5 Site security in accordance with Section 01 52 00 - Construction Facilities.

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

.7 Record drawings in accordance with Section 01 78 00 - Closeout Submittals.

.8 Monthly progress claims, administrative procedures, photographs, and holdbacks.

.9 Insurances and transcript of policies.

.4 Comply with Engineer's allocation of mobilization areas of site; for field offices and sheds, for access, traffic, and parking facilities.

.5 During construction coordinate use of site and facilities through Engineer's procedures for intra-project communications: Submittals, reports and records, schedules, coordination of drawings, recommendations, and resolution of ambiguities and conflicts.

.6 Comply with instructions of Engineer for use of temporary utilities and construction facilities.

1.6 ON-SITE DOCUMENTS

.1 Maintain at job site, one copy each of the following:

.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 Copy of approved Work schedule.
.9 Health and Safety Plan and other Safety related documents.
.10 Labour conditions and wage schedules.
.11 Other documents as specified.

1.7 SCHEDULES

.1 Submit preliminary construction progress schedule in accordance with Section 01 32 00 - Construction Progress Documents to Engineer coordinated with Engineer's project schedule. Schedule to show anticipated progress stages and final completion of work within time period required by contract documents.

.2 After review, revise and resubmit schedule to comply with project schedule requirements.

.3 During progress of Work revise and resubmit at project progress meetings or as directed by Engineer.

1.8 SUBMITTALS

.1 Make submittal to Engineer for review.

.2 Submit preliminary shop drawings in accordance with Section 01 33 00 – Submittal Procedures for review for compliance with Contract Documents; for field dimensions and

clearances, for relation to available space, and for relation to Work of other contracts. After review, revise and resubmit for transmittal to Engineer.

.3 Submit requests for payment for review to Engineer.

.4 Submit requests for interpretation of Contract Documents, and obtain instructions through Engineer.

.5 Process change orders through Engineer.

.6 Deliver closeout submittals for review by Engineer.

1.9 COORDINATION DRAWINGS

.1 Provide information required by Engineer for preparation of coordination drawings.

.2 Review and approve revised drawings for submittal to Engineer.

.3 Engineer may furnish additional drawings for clarification. These additional drawings have same meaning and intent as if they were included with plans referred to in contract documents.

1.10 CLOSEOUT PROCEDURES

.1 Notify Engineer when Work is considered ready for Substantial Performance.

.2 Accompany Engineer on preliminary inspection to determine items listed for completion or correction.

.3 Comply with Engineer's instructions for correction of items of Work listed in executed certificate of Substantial Performance.

.4 Notify Engineer of instructions of items of Work determined in Engineer's final inspection.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01 77 00 - Closeout Procedures.

1.2 SCHEDULES REQUIRED

.1 Submit schedules as follows:

- .1 Construction Progress Schedule.
- .2 Submittal Schedule for Shop Drawings.
- .3 Shutdown or closure activity.

1.3 FORMAT

.1 Prepare schedule in form of a horizontal bar chart.

.2 Provide a separate bar for each major item of work, trade or operation.

.3 Split horizontally for projected and actual performance.

.4 Provide horizontal time scale identifying first work day of each week.

.5 Format for listings: chronological order of start of each item of work.

1.4 SUBMISSION

.1 Submit initial format of schedules within 15 working days after award of Contract.

.2 Submit schedules in electronic format, forward on disc as PDF files.

.3 Submit one opaque reproduction, plus 2 copies to be retained by Engineer.

.4 Engineer will review schedule and return review copy within 10 days after receipt.

.5 Resubmit finalized schedule within 7 days after return of review copy.

.6 Submit revised progress schedule with each application for payment.

.7 Distribute copies of revised schedule to:

- .1 Job site office.
- .2 Subcontractors.
- .3 Other concerned parties.

.8 Instruct recipients to report to Contractor within 10 days, any problems anticipated by timetable shown in schedule.

1.5 CRITICAL PATH SCHEDULING

.1 Include complete sequence of demolition activities. Include schedule for final clean-up including provisions for rock/gravel fill to blend with surrounding topography.

.2 Show projected percentage of completion of each item as of first day of month.

.3 Indicate progress of each activity to date of submission schedule.

.4 Show changes occurring since previous submission of schedule:

.1 Major changes in scope.
.2 Activities modified since previous submission.
.3 Revised projections of progress and completion.
.4 Other identifiable changes.

.5 Provide a narrative report to define:

.1 Problem areas, anticipated delays, and impact on schedule.
.2 Corrective action recommended and its effect.
.3 Effect of changes on schedules of other prime contractors.

1.6 SUBMITTALS SCHEDULE

.1 Include schedule for submitting shop drawings.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

PART 1 GENERAL

1.1 SECTIONS INCLUDE

.1 Shop drawings and product data.

.2 Certificates and transcripts.

1.2 RELATED SECTIONS

.1 Section 01 32 00 – Construction Progress Documentation.

.2 Section 01 45 00 – Quality Control

.3 Section 01 78 00 – Closeout Submittals

1.3 ADMINISTRATIVE

.1 This section specifies general requirements and procedures for contractor's submissions of shop drawings, product data to Engineer for review. Submit promptly and in orderly sequence to not cause delay in Work. Submit with reasonable promptness and in orderly sequence so as to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.

.2 Do not proceed with work until relevant submissions are reviewed by Engineer.

.3 Present shop drawings, product data, 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 Engineer. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and shall be considered rejected.

.6 Notify Engineer, 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 Engineer's review of submittals.

.9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Engineer review of submission, unless Engineer gives written acceptance of specific deviations.

.10 Make any changes in submissions which Engineer may require consistent with Contract Documents and resubmit as directed by Engineer. When resubmitting, notify Engineer in writing of revisions other than those requested.

.11 Notify Engineer, in writing, when resubmitting, of any revisions other than those requested by Engineer.

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

1.4 SUBMITTALS

.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 Coordinate each submission with requirements of work and Contract Documents. Individual submissions will not be reviewed until all related information is available.

.3 Allow 10 days for Engineer's review of each submission.

.4 Adjustments made on shop drawings by Engineer are not intended to change contract price. If adjustments affect value of Work, state such in writing to Engineer immediately after receipt of approval of shop drawings. If value of work is to change a change order must be issued prior to proceeding with work.

.5 Accompany submissions with transmittal letter, containing:

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

.6 Submissions shall 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 Layout, showing dimensions, including identified field dimensions, and clearances.

.2 Setting or erection details.

.3 Relationship to adjacent work.

.7 After Engineer review, distribute copies.

.8 Submit 3 prints plus one electronic copy in PDF format of shop drawings for each requirement requested in specification Sections and as Engineer may reasonably request.

.9 Submit electronic copy in PDF format of product data sheets or brochures for requirements requested in Specification Sections and as requested by Engineer where shop drawings will not be prepared due to standardized manufacture of product.

.10 Delete information not applicable to project.

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

.12 Cross-reference product data information to applicable portions of Contract Documents.

.13 If upon review by Engineer, 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.

1.5 PROGRESS PHOTOGRAPHS

.1 Progress photograph to be electronically formatted and labelled as to location and view.

1.6 SHOP DRAWINGS REVIEW

.1 The review of shop drawings by Engineer is for the sole purpose of ascertaining conformance with the general concept. This review shall not mean that Engineer approves the detail design inherent in the shop drawings, responsibility for which shall remain with the Contractor submitting same, and such review shall not relieve the Contractor of responsibility for errors or omissions in the shop drawings or of responsibility for meeting all requirements of the construction and contract documents. Without restricting the generality of the foregoing, the Contractor is responsible for dimensions to be confirmed and correlated at the job site, for information that pertains slowly to fabrication processes or to techniques of construction and installation and for co-ordination of the work of all sub-trades.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

PART 1 GENERAL

1.1 REFERENCES

.1 Canadian Standards Association (CSA)

.1 CAN/CSA-Z259.1 Body Belts and Saddles for Work Positioning and Travel Restraint.

.2 CAN/CSA-Z259.10 Full body Harnesses.

.3 CAN/CSA-Z259.11 Energy Absorbers and Lanyards.

.4 CAN/CSA-Z259.2.1 Fall Arresters, Vertical Lifelines and Rails.

.5 FCC No. 301 Standard for Construction Operations.

.6 CSA Z797, Code of Practice for Access Scaffold.

.2 FCC No. 302 Standard for Welding and Cutting.

.3 Transportation of Dangerous Goods Act Regulations.

.4 Newfoundland Occupational Health and Safety Act, Amended

.5 Consolidated Newfoundland and Regulations 1149 WMIS Regulations Under the Occupational Health and Safety Act

.6 Consolidated Newfoundland and Regulations Occupational Health and Safety Regulations under the Occupational Health and Safety Act.

.7 Canada Labour Code, Part 2.

.8 National Building Code of Canada.

.9 Department of Transportation and Works Occupational Health and Safety Manual.

1.2 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 35 43 - Environmental Procedures.

.3 Section 01 41 00 - Regulatory Requirements.

1.3 SUBMITTALS

.1 At least 10 (ten) working days prior to commencing any site work: submit to Owner's Representative copies of:

.1 A complete Site Specific Health and Safety Plan.

.2 If work entails confined space, submit the following:

.1 Copies of confined space entry training certificates acceptable to WHSCC, as well as copies of confined space entry programs, confined space assessment, safe work practices and rescue plans.

.2 Acceptance of the Site Specific Health and Safety Plan and other submitted documents by the Owner's Representative shall only be viewed as acknowledgement that the contractor has submitted the required documentation under this specification section.

.3 Owner's Representative makes no representation and provides no warranty for the accuracy, completeness and legislative compliance of the Site Specific Health and Safety Plan and other submitted documents by this acceptance.

.4 Responsibility for errors and omissions in the Site Specific Health and Safety Plan and other submitted documents is not relieved by acceptance by Owner's Representative.

1.4 OCCUPATIONAL HEALTH AND SAFETY (SITE SPECIFIC HEALTH AND SAFETY PLANS)

.1 Conduct operations in accordance with latest edition of the Newfoundland Occupational Health and Safety (OH&S) Act and Regulations, with specific reference to codes and standards referenced therein, and the Department of Transportation and Works Occupational Health and Safety Manual (http://www.tw.gov.nl.ca/publications/ohs_full.pdf).

.2 Prepare a detailed Site Specific Health and Safety Plan that shall identify, evaluate and control job specific hazards and the necessary control measures to be implemented for managing hazards.

.3 Provide a copy of the Site Specific Health and Safety Plan upon request to Occupational Health and Safety Branch, Services NL, Province of Newfoundland and Labrador and the Owner.

.4 The written Site Specific Health and Safety Plan shall incorporate the following:

.1 Hazard assessment results.

.2 Engineering and administrative demonstrative controls (work-practices and procedures) to be implemented for managing identified and potential hazards, and comply with applicable federal and provincial legislation and more stringent requirements that have been specified in these specifications.

.3 An organizational structure which shall establish the specific chain of command and specify the overall responsibilities of contractor's employees at the work site.

.4 A comprehensive workplan which shall:

.1 define work tasks and objectives of site activities/operations and the logistics and resources required to reach these tasks and objectives.

.2 establish personnel requirements for implementing the plan, and

.5 A personal protected equipment (PPE) Program which shall detail PPE:

.1 Selection criteria based on site hazards.

.2 Use, maintenance, inspection and storage requirements and procedures.

.3 Decontamination and disposal procedures.

.4 Inspection procedures prior to during and after use, and other appropriate medical considerations.

.5 Limitations during temperature extremes, heat stress and other appropriate medical consideration.

.6 An emergency response procedure, refer to Clause 1.5 Supervision and Emergency Response Procedure of this section fro requirements.

.7 A hazard communication program for informing workers, visitors and individuals outside of the work area as required. This will include but not be limited to a visitor safety and orientation policy and program that will include education on hazards, required PPE and accompaniment while on site.

.8 A hearing conservation program in accordance with the OHS Regulations.

.9 A recent (current year) inspection form for all powered mobile equipment that will be used in fulfilling the terms of the contract. The inspection form shall, at a minimum, state that the equipment is in a safe operating condition.

.10 A complete listing of employee names and the type of equipment that they are qualified to operate for the complete scope of work for this project. The Driver's License Number should not be provided as this is confidential information.

.11 A health and safety training program which includes a safety training matrix.

.12 General safety rules.

.5 Periodically review and modify as required each component of the Site Specific Health and Safety Plan when a new hazard is identified during completion of work and when an error or omission is identified in any part of the Site Specific Health and Safety Plan.

.6 Review the completeness of the hazard assessment immediately prior to commencing work, when a new hazard is identified during completion of work and when an error or omission is identified.

.1 Be solely responsible for investigating, evaluating and managing any report of actual or potential hazards.

.2 Clearly define accident incident investigation procedures.

.3 Clearly define policy and processes for early and safe return to work.

.4 Retain copies of all completed hazard assessments at the project site and make available to the Owner's Representative immediately upon request.

.7 Implement all requirements of the Site Specific Health and Safety Plan.

.1 Ensure that every person entering the project site is informed of requirements under the Site Specific Health and Safety Plan.

.2 Take all necessary measures to immediately implement any engineering controls, administrative contacts, personal protective equipment required or termination of work procedures to ensure compliance with the Site Specific Health and Safety Plan.

1.5 SUPERVISION AND EMERGENCY RESCUE PROCEDURE

.1 Carry out work under the direct supervision of competent persons responsible for safety by ensuring the work complies with the appropriate section of OH&S Act and Regulations

.2 Assign a sufficient number of supervisory personnel to the work site.

.1 Any person assigned to supervisory duties shall not conduct significant work in relation to the contract that inhibits them from the ability to properly supervise the work site.

.3 Provide a suitable means of communications and check–in for workers required to work alone.

.4 Develop an emergency rescue plan for the job site and ensure that supervisors and workers are trained in the emergency rescue plan.

.5 The emergency response plan shall address, as a minimum:

.1 Pre-emergency planning.
.2 Personnel roles, lines of authority and communication.
.3 Emergency recognition and prevention.
.4 Safe distances and places of refuge.
.5 Site security and control
.6 Evacuation routes and procedures
.7 Decontamination procedures which are not covered by the site specific safety and health plan.
.8 Emergency medical treatment and first aid.
.9 Emergency alarm, notification and response procedures including procedures for reporting incidents to local, provincial and federal government departments.
.10 PPE and emergency equipment.
.11 Procedures for handling emergency incidents.
.12 Site specific emergency response training requirements and schedules.

.6 The emergency response procedures shall be rehearsed regularly as part of the overall training program.

.7 Provide adequate first aid facilities for the jobsite and ensure that a minimum number of workers are trained in first aid in accordance with the First Aid Regulations.

1.6 CONTRACTORS SAFETY OFFICER

.1 The contractor shall employ a Contractor's Safety Officer (CSO) who shall have as a minimum:

.1 Completed training in hazardous materials management and response/protocols.

.2 Completed training in the use, maintenance of fall protection systems certified by WHSCC at a minimum.

.3 Completed training in the erection and inspection of scaffolding.

.4 Completed training in confined space entry protocols, techniques and rescue plans, certified by WHSCC at a minimum.

.5 Completed supervisory training.

.6 Completed training in records and statistics.

.7 Completed training is hazard identification, inspections, analysis and control.

.8 Completed training in WHMIS.

.9 Completed training in health and safety program content.

.10 Completed training in investigations and reporting.

.11 Completed training in occupational health/hygiene.

.12 Completed training in employee training and communication.

.13 Completed training in Emergency Preparedness and First Aid.

.14 A working knowledge of occupational safety and health legislation and regulations (specific to Newfoundland and Labrador).

.15 A working knowledge of safe work practices required for execution of the work and operation of equipment specific to the project.

.16 A working knowledge of site safety and house keeping.

.17 A working knowledge of preventative maintenance program for Construction Site Equipment.

.2 The CSO shall:

.1 Be responsible for implementing, daily enforcement, monitoring and updating of the Site Specific Health and Safety Plan.

.2 Be responsible for the delivery of the site safety orientation and ensure that the personnel who have not been orientated are not permitted to enter the site.

.3 Report directly to and be under direction of the site superintendent or Contractor's Project Manager.

.4 Prior to mobilization on-site, hold an orientation meeting with the contractors, subcontractors and Owner's Representative to review project occupational health and safety. Include but not limit meeting to a review of:

.1 Site Specific Health and Safety Plan.

.2 Construction Safety Measures.

.3 Supervision and Emergency Rescue Procedures.

.4 Hazard Assessments

.5 Maintain a daily log of inspections, meetings, infractions and mitigating measures. Log is to be filed daily and copied to be the site superintendent and Owner's Representative.

1.7 HEALTH AND SAFETY COMMITTEE

.1 Establish an Occupational Health and Safety Committee where ten or more workers are employed on the job site as per the OH&S Act and Regulations.

1.8 RESPONSIBILITY

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

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

.3 Where life safety risks exist, the contractor must stop the work until such time as the risk can be mitigated to a safe level.

.4 Take appropriate steps to ensure that the hazards are mitigated to a safe level, workers are notified of the hazards and how to protect themselves. As well, workers must be provided with any new safe work practices or information regarding mitigation of the risk.

1.9 UNFORSEEN HAZARDS

.1 Should any unforeseen or peculiar safety-related factor, hazard, or condition become evident 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. Advise Owner's Representative verbally and in writing.

1.10 INSTRUCTION AND TRAINING

.1 Workers shall not participate in or supervise any activity on the work site until they have been trained to a level required by this job function and responsibility. Training shall as a minimum thoroughly cover the following:

.1 Federal and Provincial Health and Safety Legislation requirements including roles and responsibilities of workers and person(s) responsible for implementing, monitoring and enforcing health and safety requirements.

.2 Safety and health hazards associated with working on a contaminated site including recognition of symptoms and signs which might indicate over exposure to hazards.

.3 Limitations, use, maintenance and disinfection-decontamination of personal protective equipment associated with completing work.

.4 Limitations, use, maintenance and care of engineering controls and equipment.

.5 Limitations and use of emergency notifications and response equipment including emergency response protocol.

.6 Work practices and procedures to minimize the risk of an accident and hazardous occurrence from exposure to a hazard.

.2 Provide and maintain training of workers, as required, by Federal and Provincial legislation.

.3 Provide copies of all training certificates to Owner's Representative for review, before a worker is to enter the work site.

.4 Authorized visitors shall not access the work site until they have been:

.1 Notified of the names of persons responsible for implementing, monitoring and enforcing the Site Specific Health and Safety Plan.

.2 Briefed on safety and health hazards present on the site.

.3 Instructed in the proper use and limitations of personal protective equipment.

.4 Briefed as the emergency response protocol including notification and evacuation process.

.5 Informed of practices and procedures to minimize risks from hazards and applicable to activities performed by visitors.

.6 Accompanied while on site, and provided with the appropriate PPE.

.5 All workers will be instructed and trained on the hazards associated with work they will perform and how to protect themselves. This will include a review of all safe work practices, the reporting and documentation of hazards, reporting accidents and injuries as well as, formal training in areas of high risk (i.e. fall protection, power line hazards, traffic control persons training).

.6 The work site shall have the appropriate number of persons trained in emergency and Standard First Aid according to the First Aid Regulations.

1.11 CONSTRUCTION SAFETY MEASURES

.1 Observe construction safety measures of National Building Code, latest edition, Provincial Government, OH&S Act and Regulations, Workplace Health and Safety Compensation Commission and Municipal Authority provided that in any case of conflict or discrepancy more stringent requirements shall apply.

.2 Administer the project in a manner that will ensure, at all times, full compliance with Federal and Provincial Acts, regulations and applicable safety codes and the Site Specific Health and Safety Plan.

.3 Provide Owner's Representative with copies of all orders, directions and any other documentation, issued by the Occupational Health and Safety Branch, Services NL, immediately after receipt.

1.12 POSTING OF DOCUMENTS

.1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province and authority having jurisdiction, and in consultation with Owner's Representative.

1.13 HEALTH AND SAFETY MONITORING

.1 Periodic inspections of the contractor's work may be carried out by the Owner's Representative to maintain compliance with the Health and Safety Program. Inspections will include visual inspections as well as testing and sampling as required.

.2 The contractor shall be responsible for any and all costs associated with delays as a result of contractor's failure to comply with the requirements outlined in this section.

1.14 NOTIFICATION

.1 For projects exceeding thirty (30) days or more, the contractor shall, prior to the commencement of work, notify in writing the Occupational Health and Safety Branch, Services NL with the following information:

.1 Name and location of construction site.

.2 Company name and mailing address of contractor doing the work.

.3 The number of workers to be employed.

.4 A copy of the Site Specific Health and Safety Plan if requested.

1.15 CORRECTION OF NON-COMPLIANCE

.1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Owner's Representative.

.2 Provide Owner's Representative with written report of action taken to correct non-compliance of health and safety issues identified.

.3 Owner's Representative may stop work if non-compliance of health and safety regulations is not corrected.

1.16 WHMIS

.1 Ensure that all controlled products are in accordance with the Workplace Hazardous Materials Information System (WHMIS) Regulations and Chemical Substances of the OH&S Act and Regulations regarding use, handling, labelling, storage, and disposal of hazardous materials.

.2 Deliver copies of relevant Material Safety Data Sheets (MSDS) to job site and the Owner's Representative. The MSDS must be acceptable to Labour Canada and Health and Welfare Canada for all controlled products that will be used in the performance of this work.

.3 Train workers required to use or work in close proximity to controlled products as per OH&S Act and Regulations.

.4 Label controlled products at jobsite as per OH&S and Regulations.

.5 Provide appropriate emergency facilities as specified in the MSDS where workers might be exposed to contact with chemicals, e.g. eye-wash facilities, emergency shower.

.1 Workers to be trained in use of such emergency equipment.

.6 Contractor shall provide appropriate personal protective equipment as specified in the MSDS where workers are required to use controlled products.

.1 Properly fit workers for personal protective equipment

.2 Train workers in care, use and maintenance of personal protective equipment.

.7 No controlled products are to be brought on-site without prior approved MSDS.

.8 The MSDS are to remain on site at all times.

1.17 OVERLOADING

.1 Ensure no part of work or associated equipment is subjected to loading that will endanger its safety or will cause permanent deformation.

1.18 FALSEWORK

.1 Design and construct falsework in accordance with CSA S269.1.

1.19 SCAFFOLDING

.1 Design, erect, inspect, operate, modify, and dismantle scaffolding in accordance with CSA Z797, the OH&S Act and Regulations, and the scaffold manufacturer's written instructions. All scaffolding to bear the stamp of a professional engineer licensed by PEG-NL to practice in NL.

.2 Provide trained and certified Competent Scaffold Erectors for all scaffold erection, modification and dismantling.

.3 Conduct and document daily inspections of scaffolding by trained and certified Competent Scaffold Inspectors or Erectors.

.4 Provide a scaffold tagging system as described in CSA Z797.

.5 Ensure that all industry best practices for safe scaffold usage, including fall protection, proper loading, safe access, electrical hazards, exit door management and other concerns are strictly adhered to.

1.20 WORKING AT HEIGHTS

.1 Ensure that fall restraint or fall arrest devices are used by all workers working at elevations greater than 3.05 meters above grade or floor level in accordance with CSA Z259, where alternate fall protection systems are not provided in accordance with Occupational Health and Safety Act and Regulations.

.2 All workers performing work at height and who will be required to utilize a fall arrest system must be trained in a fall protection program certified by the WHSCC.

.3 Prior to working at height workers shall be instructed in a Contractor SWP for working at height and associated rescue plan for working at height developed specific to the work, locations and risks.

1.21 PERSONAL PROTECTIVE EQUIPMENT

.1 Ensure workers on the jobsite use personal protective equipment appropriate to the hazards identified in the Site Specific Health and Safety Plan and those workers are trained in the proper care, use, and maintenance of such equipment.

.2 PPE selections shall be based on an evaluation of the performance characteristics of the PPE relative to the requirements and limitations of the site, task-specific conditions, duration and hazards and potential hazards identified on site.

.3 Provide workers and visitors to the site with proper respiratory protection equipment.

.1 No work shall be performed in an area where an airborne contaminant exceeds recommendations of the ACGIH, do not meet the appropriate standards for the specific contaminants or are not in accordance with the OHS regulations..

.2 Respiratory protection shall be provided in accordance with the requirements of the Occupational Health and Safety Branch, Services NL and these specifications.

.3 Establish, implement and maintain a respirator inspection and maintenance program in accordance with the CSA standard identified in the OHS Regulations.

.4 Copies of all respirator owners' maintenance manuals, shall be kept at all times at the contractor's site office.

.4 Provide and maintain a supply of dermal protection equipment to allow visitors and all workers proper dermal protection.

.1 Dermal protection shall be sufficient to act as a protective barrier between the skin and an airborne contaminant or hazardous material. Dermal protection shall also be provided for all physical hazards.

.2 Dermal protection equipment shall not be used after exceeding 75% of the break through time. The break through time shall be based on the contaminant which requires the least amount of time to break through the protective equipment

.3 Copies of all dermal protection user specifications, owners and maintenance manuals shall be kept at all times at the contractor's site office.

.4 Establish, implement and maintain air inspection program to ensure proper dermal protection in accordance with CSA, NIOSH, U.S. EPA and manufacturer's requirements.

.5 Provide all workers and up to five (5) visitors to the site with proper hearing protection. Workers and visitors shall not be exposed to noise levels greater than 85 dB (A) over an eight hour shift without proper hearing protection, in accordance with the Hearing Conservation Program.

.6 Provide all workers and up to five (5) visitors to the site with CSA approved eye protection sufficient to act as a protective barrier between the eye and airborne contaminants, hazardous materials and physical hazard.

.7 Provide workers and up to five (5) visitors to the site with CSA approved hard hats meeting the CSA Z94.1.

.8 Provide high visibility apparel as defined in Occupational Health and Safety Regulations.

.9 Provide CSA approved safety boots meeting CSA Z195.

.10 Provide other personal protective equipment, as may be required by the owner, depending on duties being performed.

1.22 CONFINED SPACE WORK

.1 Comply with the Newfoundland and Labrador Occupational health and Safety Regulations.

.2 Ensure a hazard assessment has been conducted related to the confined space and the work to be performed within the space.

.3 Provide approved air monitoring equipment where workers are working in confined spaces and ensure any test equipment to be used is calibrated, in good working order and used by trained persons.

.4 Ensure all Required PPE is provided to the workers and workers are trained in its use, care and selection.

.5 Develop a confined space entry (CSE) program specific to the nature of work performed and in accordance with OH&S Act and Regulations and ensure supervisors and workers are trained in the confined space entry program. This shall include training on the CSE permit system, rescue plan, testing, communication equipment and all equipment and safe work procedures conducted in and around the confined space.

.1 Ensure that personal protective equipment and emergency rescue equipment appropriate to the nature of the work being performed is provided and used.

.6 Provide and maintain training of workers through a provider certified by the WHSCC.

.7 Provide Owner's Representative with a copy of an "Entry Permit" for each entry into the confined space to ensure compliance Provincial Legislation.

1.23 HAZARDOUS MATERIALS

.1 Should material resembling hazardous materials not previously identified/documented be encountered during the execution of work, notify Owner's Representative. Do not proceed until written instructions have been received from Owner's Representative.

.2 Unless otherwise noted the services of a recognized Environmental Consultant to provide all air monitoring and testing services required by regulatory requirements for hazardous materials abatement and repair. Coordination and cost of air monitoring/testing is the responsibility of the contractor and is to be included in their bid.

1.24 HEAVY EQUIPMENT

.1 Ensure mobile equipment used on jobsite is of the type specified in OH&S Act and Regulations fitted with a Roll Over Protective (ROP) Structure and Falling Object Protective (FOP) Structure.

.2 Provide certificate of training in Power Line Hazards for operators of heavy equipment.

.3 Obtain written clearance from the power utility where equipment is used in close proximity to (within 5.5 metres) overhead or underground power lines.

.4 Equip cranes with:

.1 A mechanism which will effectively prevent the hook assembly from running into the top boom pulley.

.2 A legible load chart.

.3 A maintenance log book.

PART 2 PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 PART 3 EXECUTION (NOT APPLICABLE

END OF SECTION

PART 1 GENERAL

1.1 FIRES

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

1.2 DISPOSAL OF WASTES

.1 Do not bury rubbish and waste materials on site.

.2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.

1.3 DRAINAGE

.1 Provide temporary drainage and pumping as necessary to keep excavations and site free from water.

.2 Do not pump water containing suspended materials into waterways, sewer or drainage systems.

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

1.4 SITE CLEARING AND PLANT PROTECTION

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

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

.3 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage. Avoid unnecessary traffic, dumping and storage of materials over root zones.

.4 Minimize stripping of topsoil and vegetation.

.5 Restrict tree removal to areas indicated or designated by Engineer.

1.5 POLLUTION CONTROL

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

.2 Control emissions from equipment and plant to local authorities emission requirements.

.3 Prevent sandblasting and other extraneous materials from contaminating air beyond application area, by providing temporary enclosures.

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

1.6 NOTIFICATION

.1 Engineer will notify Contractor in writing of observed non-compliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of environmental protection. Contractor: after receipt of such notice, inform Engineer of proposed corrective action and take such action as approved by Engineer.

.2 Engineer may issue stop order of work until satisfactory corrective action has been taken.

.3 No time extensions will be granted or equitable adjustments allowed to Contractor for such suspensions.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 Section 02 82 13 – Lead Paint Removal

1.2 REFERENCES AND CODES

.1 Perform Work in accordance with National Building Code of Canada (NBC) including all 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 Meet or exceed requirements of:

.1 Contract documents.

.2 Specified standards, codes and referenced documents.

1.3 HAZARDOUS MATERIAL DISCOVERY

.1 Asbestos: There has been no asbestos identified on the light tower or attached shed. A sample of the roofing shingles on the attached shed indicated that the shingles are not asbestos containing (see Appendix B).

.2 Mould: The Contractor is to conduct all work in areas where mould is present in accordance with governing regulations, including the use of PPE should workers be handling mould stained surfaces. It is noted that mould is expected to be present in the tower and attached shed.

.3 Lead Paint: Lead paint is present on the interior and exterior surfaces of the light tower and attached shed. Take precautions during work activities to limit exposure to lead dust. A decontamination facility, enclosed work area and installation of negative air units is required prior to disturbance or abrasive blasting of any painted surfaces.

1.4 BUILDING SMOKING ENVIRONMENT

.1 Comply with smoking restrictions.

1.5 RELICS AND ANTIQUITIES

.1 Protect relics, antiquities, items of historical or scientific interest such as cornerstones and contents, commemorative plaques, inscribed tablets, and similar objects found during course of work.

.2 Give immediate notice to Engineer and await Engineer's written instructions before proceeding with work in this area.

.3 Relics, antiquities and items of historical or scientific interest remain property of Canada.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

PART 1 GENERAL

1.1 SECTIONS INCLUDE

.1 Inspection and testing, administrative and enforcement requirements.

1.2 RELATED SECTIONS

.1 Section 01 33 00 – Submittal Procedures

.2 Section 01 78 00 – Closeout Submittals

1.3 INSPECTION

.1 Allow Engineer 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 Engineer instructions.

.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 Engineer may order any 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, Engineer shall pay cost of examination and replacement.

1.4 INDEPENDENT INSPECTION AGENCIES

.1 Independent Inspection/Testing Agencies will be engaged by Engineer for purpose of inspecting and/or testing portions of Work.

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

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

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

1.5 ACCESS TO WORK

.1 Allow inspection/testing agencies access to Work.

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

1.6 PROCEDURES

.1 Notify appropriate agency and Engineer 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 an orderly sequence so as not to cause delay in Work.

1.7 REJECTED WORK

.1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Engineer 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 Engineer it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner may deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which shall be determined by Engineer.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01 52 00 - Construction Facilities.

.2 Section 01 56 00 - Temporary Barriers and Enclosures.

1.2 INSTALLATION AND REMOVAL

.1 Provide temporary utilities controls in order to execute work expeditiously.

.2 Remove from site all such work after use.

1.3 DEWATERING

.1 Provide temporary drainage and pumping facilities to keep excavations and site free from standing water.

1.4 WATER SUPPLY

.1 If required for the Contractor's work activities, arrange for connection with appropriate utility company and pay all costs for installation, maintenance and removal.

1.5 TEMPORARY HEATING AND VENTILATION

.1 Pay for costs of temporary heat and ventilation where required, including costs of installation, fuel operation, maintenance and removal of equipment. Use of direct, fired heaters discharging waste products into work areas will not be permitted unless prior approval is given by Engineer.

.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 Provide adequate ventilation to meet health regulations for safe working environment.

.4 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.

.5 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 Vent direct-fired combustion units to outside.

.6 Be responsible for damage to Work due to failure in providing adequate heat, humidity and protection during construction.

.7 Use of existing systems for temporary heating, ventilating or air conditioning will not be permitted.

1.6 TEMPORARY POWER AND LIGHT

.1 Provide and pay for temporary power during constructing for temporary lighting, heating, site construction trailers and operating of power tools in accordance with governing regulations and the Canadian Electrical Code, latest edition.

.2 Arrange for connection with Utility company. Pay all costs for installation, maintenance and removal of cables, distribution and branch panel boards, poles, lighting, heating and general power receptacles as required.

.3 Temporary power for electric cranes and other equipment requiring in excess of above is responsibility of Contractor.

.4 Provide and maintain temporary lighting throughout project.

.5 General contractor responsible for payment of all electrical energy charges associated with temporary power.

1.7 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.

.2 Burning rubbish and construction waste materials is not permitted on site.

1.8 SANITARY FACILITIES

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

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

1.9 REMOVAL OF TEMPORARY FACILITIES

.1 Remove temporary facilities from site when directed by Engineer.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

.1 Construction aids.

.2 Office and sheds.

.3 Project identification.

1.2 RELATED SECTIONS

.1 Section 01 35 29.06 – Health and Safety Requirements

.2 Section 01 51 00 - Temporary Utilities.

.3 Section 01 56 00 - Temporary Barriers and Enclosures.

1.3 INSTALLATION AND REMOVAL

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

.2 Remove from site all such work after use.

1.4 SCAFFOLDING

.1 Provide and maintain scaffolding in rigid, secure and safe manner.

.2 Erect scaffolding independent of walls. Remove promptly when no longer required. Refer to Section 01 35 29.06 – Health and Safety Requirements. Note that all scaffolding is to bear the stamp of a professional engineer, licensed by PEG-NL to practice engineering in NL.

1.5 HOISTING

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

.2 Hoists cranes shall be operated by certified operator.

1.6 SITE STORAGE/LOADING

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

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

1.7 EQUIPMENT, TOOL AND MATERIALS STORAGE

.1 Provide and maintain, in a 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 a manner to cause least interference with work activities.

1.8 SANITARY FACILITIES

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

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

1.9 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.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

.1 Barriers.

.2 Environmental Controls.

.3 Traffic Controls.

.4 Fire Routes.

1.2 RELATED SECTIONS

.1 Section 01 51 00 – Temporary Utilities.

.2 Section 01 52 00 – Construction Facilities.

1.3 INSTALLATION AND REMOVAL

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

.2 Remove from site all such work after use.

1.4 HOARDING

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

1.5 GUARD RAILS AND BARRICADES

.1 Provide secure, rigid guard rails and barricades around deep excavations, open shafts, open stair wells, open edges of floors and roofs.

.2 Provide as required by governing authorities.

1.6 DUST TIGHT SCREENS

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

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

1.7 ACCESS TO SITE

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

.2 Provide snow removal during period on work if required to adhere to contract schedules.

1.8 FIRE ROUTES

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

1.9 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.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

.1 Field engineering survey services to measure and stake site.

1.2 SURVEY REFERENCE POINTS

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

.2 Make no changes or relocations without prior written notice to Engineer.

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

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

1.3 SURVEY REQUIREMENTS

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

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

1.4 EXISTING SERVICES

.1 Where work involves breaking into or connecting to existing services, carry out work at times directed by authorities having jurisdiction, with minimum of disturbance to pedestrian and vehicular traffic.

.2 Before commencing work, establish location and extent of service lines in area of Work and notify Engineer of findings.

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

1.5 RECORDS

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

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

1.6 SUBMITTALS

.1 On request of Engineer, submit documentation to verify accuracy of field engineering work.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

PART 1 GENERAL

1.1 GENERAL

.1 Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.

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

.3 Provide adequate ventilation during use of volatile or noxious substances. Use for building ventilation systems is not permitted for this purpose.

1.2 RELATED SECTION

.1 Section 01 77 00 - Closeout Procedures.

1.3 PROJECT CLEANLINESS

.1 Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by Owner or other Contractors.

.2 Remove waste materials and debris from site at the end of each working day. Do not burn waste materials on site.

.3 Clear snow and ice from access to building.

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

.7 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.

1.4 FINAL CLEANING

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

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

.3 When the Work is Totally Performed, remove surplus products, tools, construction machinery and equipment. Remove waste products and debris other than that caused by the Owner or other Contractors.

.4 Remove waste materials from the site at regularly scheduled times or dispose of as directed by the Engineer. Do not burn waste materials on site.

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

.6 Broom sweep and rake work area to satisfaction of Engineer at project completion.

1.5 WASTE MANAGEMENT AND DISPOSAL

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

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

PART 1 GENERAL

1.1 DEFINITIONS

.1 Demolition Waste Audit (DWA): Relates to actual waste generated from project.

.2 Materials Source Separation Program (MSSP): Consists of series of ongoing activities to separate reusable and recyclable waste material into material categories from other types of waste at point of generation.

.3 Recyclable: Ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse by others.

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

.5 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.

.6 Reuse: Repeated use of product in same form but not necessarily for same purpose. Reuse includes:

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

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

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

.8 Separate Condition: Refers to waste sorted into individual types.

.9 Source Separation: Acts of keeping different types of waste materials separate beginning from first time they became waste.

1.2 MATERIALS SOURCE SEPARATION PROGRAM (MSSP)

.1 Prepare MSSP and have ready for use prior to project start-up.

.2 Implement MSSP for waste generated on project in compliance with approved methods and as reviewed by authorities having jurisdiction.

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

.4 Provide containers to deposit reusable and recyclable materials.

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

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

.7 Collect, handle, store on-site, and transport off-site, salvaged materials in separate condition.

.1 Transport to recycling facility.

1.3 STORAGE, HANDLING AND PROTECTION

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

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

.3 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to approved facility.

.4 Separate and store materials produced during dismantling of structures in designated areas.

.5 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by approved facilities.

.1 On-site source separation is recommended.

1.4 DISPOSAL OF WASTES

.1 Do not bury rubbish or waste materials.

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

.3 Remove materials from deconstruction as deconstruction/disassembly Work progresses.

.4 Prepare project summary to verify destination and quantities on a material-by-material basis as identified in pre-demolition material audit.

1.5 USE OF SITE AND FACILITIES

.1 Execute work with least possible interference or disturbance to normal use of premises.

.2 Provide security measures approved by Engineer.

1.6 SCHEDULING

.1 Coordinate Work with other activities at site to ensure timely and orderly progress of Work.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 APPLICATION

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

3.2 CLEANING

.1 Remove tools and waste materials on completion of Work, and leave work area in clean and orderly condition.

.2 Clean-up work area as work progresses.

.3 Source separate materials to be recycled into specified sort areas.

3.3 DIVERSION OF MATERIALS

.1 Separate materials to be recycled or turned over to the Owner, from general waste stream and stockpile in separate piles or containers, as reviewed by Engineer and consistent with applicable fire regulations.

.1 Mark containers or stockpile areas.

.2 Provide instruction on disposal practices.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01 74 11 - Cleaning.

.2 Section 01 78 00 - Closeout Submittals.

1.2 FINAL INSPECTION AND DECLARATION PROCEDURES

.1 Contractor's Inspection: The Contractor and all Subcontractors shall conduct an inspection of Work, identify deficiencies and defects; repair as required. Notify the Engineer in writing of satisfactory completion of the Contractor's Inspection and that corrections have been made. Request an Engineer's Consultant's Inspection.

.2 Engineer's Inspection: Engineer and the Contractor will perform an inspection of the Work to identify obvious defects or deficiencies. The contractor shall correct Work accordingly.

.3 Completion: submit written certificate that the following have been performed:

- .1 Work has been completed and inspected for compliance with Contract Documents.
- .2 Defects have been corrected and deficiencies have been completed.
- .3 Certificates required by Fire Commissioner, Utility companies have been submitted.
- .4 Work is complete and ready for Final Inspection.

.4 Final Inspection: When items noted above are completed, request final inspection of Work by the Engineer, representative of DFO and the Contractor. If Work is deemed incomplete by the Engineer, complete outstanding items and request a reinspection.

.5 Declaration of Substantial Performance: When the Engineer considers deficiencies and defects have been corrected and it appears requirements of Contract have been substantially performed, make application for Certificate of Substantial Performance.

.6 Declaration of Total Performance: When the Engineer considers final deficiencies and defects have been corrected and it appears requirements of the Contract have been totally performed, make application for certificate of Total Performance. If Work is deemed incomplete by the Consultant, complete the outstanding items and request a reinspection.

1.3 REINSPECTION

.1 Should status of work require re-inspection by Engineer due to failure of work to comply with Contractor's claims for inspection, Owner will deduct amount of compensation for reinspection services from payment to Contractor.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

.1 As-built, and specifications.

1.2 RELATED SECTIONS

.1 Section 01 33 00 – Submittal Procedures.

.2 Section 01 45 00- Quality Control.

.3 Section 01 71 00 – Examination and Preparation.

.4 Section 01 77 00 - Closeout Procedures.

1.3 AS-BUILTS AND SAMPLES

.1 In addition to requirements in General Conditions, maintain at the site for Engineer one record copy of:

- .1 Contract Drawings.
- .2 Specifications.
- .3 Addenda.
- .4 Change Orders and other modifications to the Contract.
- .5 Inspection 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 Engineer.

1.4 RECORDING ACTUAL SITE CONDITIONS

.1 Record information on drawings, provided by Engineer.

.2 Provide felt tip marking pens, maintaining red color pens for recording information.

.3 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.

.4 Contract Drawings: legibly mark each item to record actual construction, including:

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

.2 Field changes of dimension and detail.

.3 Changes made by change orders.

.4 Details not on original Contract Drawings.

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

.1 Changes made by Addenda and change orders.

.6 At completion of project provide all recorded information on print drawings.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

.1 Methods and procedures for demolition of structures, parts of structures, basements and foundation walls and includes abandonment and removal of septic tanks and tanks containing petroleum products.

1.2 RELATED SECTIONS

.1 Section 01 35 24 – Special Procedures on Fire Safety Requirements

.2 Section 01 35 25 – Special Procedures on Lockout Requirements

.3 Section 01 50 00 – Temporary Facilities

.4 Section 01 52 00 – Construction Facilities

.5 Section 01 56 00 - Temporary Barriers and Enclosures

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

.7 Section 01 74 11 – Cleaning

.8 Section 02 83 12 – Lead Abatement Maximum Precautions

1.3 REFERENCES

.1 Canadian Standards Association (CSA).

.1 CSA S350, Code of Practice for Safety in Demolition of Structures

1.4 EXISTING CONDITIONS

.1 Should material resembling spray or trowel applied asbestos or any other designated substance be encountered in course of demolition, stop work, take preventative measures, and notify Owner's Representative immediately. Do not proceed until written instructions have been received.

.2 Structures to be demolished to be based on their condition on date that tender is accepted.

.3 Salvage items as identified by Owner's Representative. Remove, protect and store salvaged items as directed by Owner's Representative. Deliver to Owner as directed.

1.5 ENVIRONMENTAL PROTECTION

.1 Ensure work is done in accordance with Section 01 35 43 – Environmental Procedures.

.2 Prevent debris from blocking electrical systems which must remain in operation.

.3 Ensure that demolition work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.

.4 Fires and burning of waste or materials is not permitted on site.

.5 Do not bury waste or materials on site.

.6 Do not dispose of waste or volatile materials such as mineral spirits, oil, petroleum based lubricants, or toxic cleaning solutions into watercourses, storm or sanitary sewers. Ensure proper disposal procedures are maintained throughout project.

.7 Protect trees, plants and foliage on site and adjacent properties where indicated.

.8 Prevent extraneous materials from contaminating air beyond application area, by providing temporary enclosures during demolition work.

.9 Cover or wet down dry materials and waste to prevent blowing dust and debris.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 PREPARATION

.1 Do work in accordance with 01 35 29.06 – Health and Safety Requirements.

.2 Do not disrupt active or energized utilities designated to remain undisturbed.

3.2 SAFETY CODE

.1 Do demolition work in accordance with Section 01 56 00 – Temporary Barriers and Enclosures.

3.3 DEMOLITION

.1 Remove existing equipment, services, and obstacles where required for refinishing or making good of existing surfaces, and replace as work progresses.

.2 At end of each day's work, leave Work in safe and stable condition. Protect interiors of parts not to be demolished from exterior elements at all times.

.3 Demolish to minimize dusting. Keep materials wetted as directed by Owner’s Representative.

.4 Only dispose of material specified by selected alternative disposal option as directed by Owner’s Representative.

.5 Ensure that these materials will not be disposed of in landfill or waste stream destined for landfill.

.6 Remove and dispose of demolished materials except where noted otherwise and in accordance with authorities having jurisdiction.

.7 Environmental:

.1 Remove contaminated or dangerous materials as defined by authorities having jurisdiction, relating to environmental protection, from site and dispose of in safe manner to minimized danger at site or during disposal.

.8 Prior to the start of any demolition work remove contaminated or hazardous materials as defined by authorities having jurisdiction, from site and dispose of at designated disposal facilities.

.9 All existing interior and exterior painted surfaces shall be stripped of paint using methods as outlined in painting sections 09 91 13. Contractor to submit to engineer methods of removal for approval prior to commencement of work.

3.4 REMOVAL FROM SITE

.1 Dispose of materials as directed by Owner's Representative.

.2 Dispose of materials not designated for alternate disposal in accordance with applicable regulations.

3.5 COORDINATION

.1 Coordinate alternative disposal activities with Owner's Representative's on site waste diversion representative.

END OF SECTION

PART 1 GENERAL

1.1 DESCRIPTION

1. This section specifies controls needed to limit occupational and environmental exposure to lead hazards. For the purposes of disposal, the lead based paint on the interior and exterior surfaces of the light tower are to be considered hazardous and are restricted from landfilling (disposal is to be to an approved hazardous waste disposal site). In addition, the siding on the attached shed, is to be considered hazardous lead waste (this includes the flaking/peeling paint, as well as the siding substrate itself). Laboratory results of the previous lead paint sampling program are included in Appendix B.

2. Provide Departmental Representative necessary permits for transportation and disposal of lead based paint waste and proof it has been received and properly disposed. Provide proof satisfactory to Departmental Representative that employees had instruction on hazards of lead exposure, respirator use, dress, entry and exit from Work Area, and aspects of work procedures and protective measures. Provide proof that supervisory personnel have attended lead abatement course, of not less than two days duration, approved by Departmental Representative. Minimum of one supervisor for every ten workers.

3. Contractor to submit Shop Drawings on containment system for approval by Departmental Representative. All shop drawings for scaffolding and temporary supports shall be submitted under seal of professional engineer licensed to practice in Newfoundland & Labrador.

4. Implement negative air pressure when removing lead based paint products (either through manual scraping activities or abrasive blasting activities). A negative air machine extracts air directly from work area and filters extracted air through a HEPA filter, discharge air to exterior. Maintain pressure differential of 5 to 7 Pa relative to adjacent areas outside of work areas. Machine to be equipped with alarm to warn of system breakdown, and equipped with instrument to continuously monitor and automatically record pressure differences.

1.2 REFERENCES

1. Guideline for Lead on Construction Projects from Occupational Health and Safety Branch, Ontario Ministry of Labour, April 2011.

2. Health Canada - Workplace Hazardous Materials Information System (WHMIS), Material Safety Data Sheets (MSDS).

3. Human Resources and Social Development Canada (HRSDC) - Canada Labour Code Occupational Health and Safety Regulations.

4. Transport Canada (TC) - Transportation of Dangerous Goods Act, 1992 (TDGA).

5. Management of Disposal of Construction, Abatement and Demolition Waste Containing Lead-Based Paint, 2010, NL Department of Environment and Conservation.

PART 2 PRODUCTS

2.1 GENERAL

.1 Submit applicable work plan showing measures to be implemented to limit occupational exposure to lead during demolition activities.

.2 Respirators: Use type CE abrasive blast supplied respirator operated in a positive pressure mode with a tight fitting mask facepiece.

PART 3 EXECUTION

3.1 REMOVAL PLAN

1. Submit a detailed job-specific plan to limit the workers occupational exposure to lead during demolition activities. Plan to be in accordance with Ontario's guideline for lead on construction projects.

2. Include in the plan, eating, drinking, smoking and restroom procedures, interface of trades, sequencing of lead related work, air sampling plan, respirators, protective equipment, and a detailed description of the method of containment of the operation to ensure that airborne lead concentrations of 30 micrograms per cubic meter of air are not exceeded outside of the lead control area.

3. Include air sampling, training and strategy, sampling methodology, frequency, duration of sampling, and qualifications of air monitoring personnel in the air sampling portion on the plan.

4. Post signs to warn of lead hazard. Wear protective clothing to prevent skin contamination, including but not limited to coveralls, gloves, hats and footwear or disposable coverlets; safety glasses, face shields or goggles. All protective clothing to be removed at the end of each shift and be decontaminated.

5. Construct full tight enclosure (with tarps that are generally impermeable and fully sealed joints and entryways). Install negative pressure machine system and operate continuously from installation of polyethylene sheeting until completion of final cleanup.

6. Seal off openings, polyethylene sheeting sealed with tape. Cover floor surfaces or working platform in work area from wall to wall with FR polyethylene drop sheets. Build airlocks at entrances and exits from work areas to ensure work areas are always closed off by one curtained doorway when workers enter or exit. At point of access to work areas install warning signs.

7. Maintain emergency and fire exits from work areas, or establish alternative exits satisfactory to Authority having jurisdiction

8. Where water application is required provide temporary water supply by use of appropriately sized hoses for application of water as required.

9. Provide electrical power and shut off for operation of powered tools and equipment. Provide 24 volt safety lighting and ground fault interrupter circuits on power source for electrical tools, in accordance with applicable CSA Standard. Ensure safe installation of electrical lines and equipment.

10. Worker Decontamination Enclosure System includes Equipment and Access Room and Clean Room, as follows:

    .1 Equipment and Access Room: construct between exit and work areas, with two curtained doorways, one to the rest of the site, and one to work area. Install waste receptor and storage facilities for workers' shoes and protective clothing to be re-worn in work areas. Build large enough to accommodate specified facilities, equipment needed, and at least one worker allowing sufficient space to change comfortably.

    .2 Clean Room: construct with curtained doorway to outside of enclosures. Provide lockers or hangers and hooks for workers' street clothes and personal belongings. Provide storage for clean protective clothing and respiratory equipment. Install mirror to permit workers to fit respiratory equipment properly.

11. Construction of Decontamination Enclosures:

    .1 Construct framing for enclosures or otherwise provide portable enclosures as approved by the Departmental Representative. Line enclosure with polyethylene sheeting and seal with tape, apply two layers of FR polyethylene on floor.

    .2 Construct curtain doorways between enclosures so when people move through or waste containers and equipment are moved through doorway, one of two closure comprising doorway always remains closed.

    .3 Shower room in decontamination facility to be provided with the following:

        .1 Hot and cold water or water of constant temperature not less than 40 degrees Celsius or more than 50 degrees Celsius.

        .2 Individual controls inside to regulate water flow and temperature.

    .4 Prior to each shift in which a decontamination facility is being used, a competent person should inspect the facility to ensure that there are no defects that would allow lead-containing dust to escape. Defects should be repaired before the facility is used. The decontamination facility should be maintained in a clean and sanitary condition.

3.2 PROTECTION

1. Not later than ten (10) days before commencing work on this project notify the Occupational Health and Safety Division in writing. Provide telephone notification immediately prior to start of work.

3.3 CLEAN-UP AND DISPOSAL

1. Collect lead-contaminated waste, scrap, debris, bags, containers, equipment, and lead-contaminated clothing, which may produce airborne concentrations of lead particles.

2. Handle, store, transport, and dispose lead or lead-contaminated waste in accordance with governing regulations, as hazardous waste.

END OF SECTION

PART 1- GENERAL

1.1 RELATED WORK

.1 Section 09 91 13 – Painting.

1.2 SAMPLES

.1 Submit samples or catalogue cuts in accordance with Section 01340 - Shop Drawings, Product Data, Samples and Mock-ups.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Corrosion inhibitor for use as a barrier over exposed reinforcing or exposed concrete ties. Standard of Acceptance: CPD Corrosion Inhibitor or approved equal.

.2 Hydraulic cement based patching compound for interior and exterior concrete repair. Standard of Acceptance: CPD Fast-Crete OH, or approved equal.

2.2 PROPERTIES

.1 Corrosion Inhibitor:
Compressive strength - 30 MPa (4500 psi) to meet ASTM C-109, 28 days.
Resistance to chloride penetration - 450-550 coulombs to meet ASSHTO-T277.

.2 Cement Based - Patching Compound:
Compressive strength - 37.9 MPa (5500 psi) at 28 days, to meet ASTM C109-77 21□C (70□F).
Slant shear bond strength - 6.5 MPa (943 psi) at 28 days, to meet ASTM C882-91.
Chloride permeability - 3.5 coulombs at 360 minutes/current .003 ? to meet ASSHTO T277-831.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION

.1 Concrete substrate must be clear, sound and free from dust loose particles, oil, grease, and all other foreign matter. Chip down punky concrete to solid sound material.

3.2 MIXING

.1 One experienced and competent workman shall be in charge of all mixing for the duration of the job.

.2 During mixing operations, ground surfaces must be protected from spillage and staining.

.3 Mixing of the patching compound shall be done with mechanical mixers only. Containers shall be used to ensure proper measurement of materials. Shovel measurement is not acceptable. Mixing of the corrosion inhibitor shall be accordance with manufacturer's written instructions. Total mix time shall be within limits set by manufacturer.

.4 All mixing boards and mechanical mixing machines must be cleaned between batches.

.5 Placing of patching compound to be executed with expediency since product is fast-setting material. Job procedures must be modified to minimize the time between mixing and placing the product.

.6 Both corrosion inhibitor and patching compound shall be installed within strict accordance to manufacturer's instructions.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

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

.3 Section 05 51 29 - Metal Stairs and Ladders.

.4 Section 09 91 13 - Exterior Painting.

.5 Section 09 91 23 - Interior Painting.

1.2 REFERENCES

.1 American Society for Testing and Materials, (ASTM)

- .1 ASTM A53/A53M, Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Steamless.
- .2 ASTM A269, Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
- .3 ASTM A307, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.

.2 Canadian General Standards Board (CGSB)

- .1 CAN/CGSB 1.153, High-Build, Gloss Epoxy Coating.

.3 Canadian Standards Association (CSA)

- .1 CAN/CSA-G40.20/G40.21, General Requirements for Rolled or Welded Structural Quality Steel.
- .2 CAN/CSA-G164, Hot Dip Galvanizing of Irregularly Shaped Articles.
- .3 CSA S16, Design of Steel Structures.
- .4 CSA W48, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).
- .5 CSA W59, Welded Steel Construction (Metal Arc Welding).

.4 The Environmental Choice Program

- .1 CCD-047, Architectural Surface Coatings.
- .2 CCD-048, Surface Coatings - Recycled Water-borne.

.5 Green Seal Environmental Standards (GS)

- .1 GS-11, Paints and Coatings.

.6 The Master Painters Institute (MPI)

.1 Architectural Painting Specification Manual.

1.3 SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's printed product literature, specifications and data sheet

.2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets. Indicate VOC's:

.1 For finishes, coatings, primers and paints.

.2 Shop Drawings

.1 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

1.4 QUALITY ASSURANCE

.1 Test Reports: Submit Certified test reports showing compliance with specified performance characteristics and physical properties.

.2 Certificates: Submit Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

.1 Deliver, store, handle and protect materials in accordance with Section 01 61 00 - Common Product Requirements.

.2 Cover exposed stainless steel surfaces with pressure sensitive heavy protection paper or apply strippable plastic coating, before shipping to job site.

.3 Leave protective covering in place until final cleaning of building. Provide instructions for removal of protective covering.

PART 2 PRODUCTS

2.1 MATERIALS

.1 Steel sections and plates: to CAN/CSA-G40.20/G40.21, Grade 300W.

.2 Steel pipe: to ASTM A53/A53M standard weight, galvanized finish.

.3 Welding materials: to CSA W59.

.4 Welding electrodes: to CSA W48 Series.

.5 Bolts and anchor bolts: to ASTM A307.

.6 Grout: non-shrink, non-metallic, flowable, 15 MPa at 24 hours.

.7 Aluminum bar, rod, wire and extruded shapes to: CSA HA.5 [.6061-T6].

.8 Aluminum sheet or plate: to CSA HA.4 [6061-T6].

.9 Aluminum drawn tubes: CSA HA.7 [.6061-T6].

2.2 FABRICATION

.1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.

.2 Use self-tapping shake-proof flat round oval headed screws on items requiring assembly by screws or as indicated.

.3 Where possible, fit and shop assemble work, ready for erection.

.4 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

2.3 FINISHES

.1 Galvanizing: hot dipped galvanizing with zinc coating 600 g/m^2 to CAN/CSA-G164.

.2 Shop coat primer: in accordance with chemical component limits and restrictions requirements and VOC limits of GS-11.

.3 Zinc primer: zinc rich, ready mix: in accordance with chemical component limits and restrictions requirements and VOC limits of GS-11.

.4 High Build Epoxy Coating: to CAN/CGAB – 1.153.

2.4 ISOLATION COATING

.1 Isolate aluminum from following components, by means of bituminous paint:

.1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.
.2 Concrete, mortar and masonry.
.3 Wood.
.4 Isolate aluminum from galvanized steel using EPDM gasketing.

2.5 PIPE RAILINGS

.1 Aluminum Pipe: as detailed on drawings formed to shapes and sizes as indicated.

2.6 ACCESS LADDERS INTERIOR

.1 Aluminum ladders: as detailed on drawings form to shapes and sizes as indicated.

PART 3 EXECUTION

3.1 ERECTION

.1 Do welding work in accordance with CSA W59 unless specified otherwise.

.2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.

.3 Provide suitable means of anchorage acceptable to Owner's Representative such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.

.4 Exposed fastening devices to match finish and be compatible with material through which they pass.

.5 Provide components for building by other sections in accordance with shop drawings and schedule.

.6 Make field connections with bolts to CAN/CSA-S16, or weld.

.7 Hand items over for casting into concrete or building into masonry to appropriate trades together with setting templates.

.8 Touch-up rivets, field welds, bolts and burnt or scratched surfaces after completion of erection with primer.

.9 Touch-up galvanized surfaces with zinc rich primer where burned by field welding.

.10 Touch-up high build epoxy coated finishes.

3.2 PIPE RAILINGS

.1 Install aluminum pipe railings to ladders as indicated.

3.3 ACCESS LADDERS

.1 Install access ladders in locations as indicated.

3.4 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

3.5 PROTECTION

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

.2 Repair damage to adjacent materials caused by metal fabrications installation.

END OF SECTION

1 General

1.1 RELATED WORK

.1 05500 Metal Fabrications - Pipe railings

.2 05500 Metal Fabrications - Steel catwalks

1.2 GENERAL INSTRUCTIONS & REFERENCES

.1 Perform all work in accordance with the Canadian Labour Code, the Canadian Welding Bureau and to CSA S37-94.

.2 All welding and shop practices during fabrication to be in accordance with CSA W59.2-M1991.

.3 Welding and shop to be certified to W47.2-92 or latest edition, minimum division 2.1 or higher. Proof of certification to be submitted prior to award to contract.

.4 Aluminum finishes shall be to Association Designation System latest edition.

1.3 DESIGN CRITERIA

.1 Design metal ladders, railings and landing construction and connections to NBC vertical and horizontal live load requirements.

.2 Detail and fabricate ladders to NAAMM Metal Stairs Manual fourth edition 1982.

1.4 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Section 01340 - Shop Drawings, Product Data, Samples and Mock-ups.

.2 Indicate construction details, sizes of steel sections and thickness of steel sheet.

.3 Each shop drawing submitted shall bear the stamp of a qualified professional engineer registered in Canada Province of NF.

2 Products

2.1 MATERIALS

.1 Aluminum bar, rod, wire and extruded shapes: to CSA HA.5 .6061-T6, marine grade.

.2 Aluminum sheet or plate: to CSA HA.4 .6061-T6, marine grade.

.3 Aluminum drawn tubes: to CSA HA.7 .6061-T6, marine grade.

.4 All aluminum alloys to CSA S157.

.5 Welding consumables to be aluminum filler alloy 5356 to AWS/ANSI A5.10.

2.2 ALUMINUM FINISHES

.1 Exposed surfaces of aluminum components to be left bare in accordance with Aluminum Association Designation System for Aluminum Finishes - 1980.

2.3 ISOLATION COATING

.1 Isolate aluminum from following components, by means of isolation coating:
- .1 Concrete, mortar and masonry.
- .2 Wood.

.2 Isolate aluminum from galvanized steel using EPDM gasketing.

2.4 FABRICATION

.1 Weld connections where possible, otherwise bolt connections. Countersink exposed fastenings, cut off bolts flush with nuts. Make exposed connections of same material, colour and finish as base material on which they occur.

.2 Accurately form connections with exposed faces flush; mitres and joints tight. Make risers of equal height.

.3 Grind or file exposed welds and steel sections smooth.

.4 Shop fabricate stairs in sections as large and complete as practicable. Confirm all dimensions prior to fabrication.

2.5 LADDERS

.1 Form treads from 6 mm thick aluminum checkered safety plate to profiles as detailed. Form landings from 6 mm thick galvanized steel checkered safety plate reinforced by steel angles at spacing as detailed.

.2 Weld treads to aluminum channels.

2.6 PIPE HANDRAILS/LADDERS

.1 Construct handrails from round aluminum pipe as noted.

.2 Cap and weld exposed ends of balusters and handrails.

3 Execution

3.1 WELDING PROCEDURE

.1 SCOPE

.1 This Welding Procedure Specification has been prepared to meet the requirements of Clause 7 of CSA Standard W47.2 - 1987.

.2 A change in any of the variables contained in succeeding paragraphs or detailed on applicable Welding Procedure Data Sheet(s) shall require a new Welding Procedure Specification and/or (a) new Welding Procedure Data Sheet.

.2 WELDING PROCEDURE

.1 The welding shall be done manually using the Gas Metal-Arc Welding Process (GMAW).

.2 The joints shall be made by single or multiple pass welding, from one or both sides, with or without the use of backing, as indicated on the Welding Procedure Data Sheets referring to this Specification.

.3 BASE METAL

.1 The base metal shall conform to a specification for the following Aluminum Association alloy designations as specified in Group 4 of Table 1A in CSA W47.2- 1987; 6351, 6061, 6063.

.2 Base metal thickness shall be a minimum of 1/8" (3 mm) and a maximum of 1.0"(25 mm).

.4 PREPARATION OF BASE METAL

.1 The edges or surfaces of the parts to be joined by welding shall be prepared by sawing, shearing, grinding, planing, chipping, machining or plasma arc cutting.

.2 Preparation of the base metal profile shall conform to the requirements of the applicable data sheet. Both shop and factory prepared ends must be clean and free from all paint, oil, dirt, scale and other material likely to be detrimental to welding, immediately prior to the commencement of the welding process.

.3 The maximum tolerances on joint parameters as specified on the data sheet shall be as follows:

- Root Face of Joint ±1/16" (1.6 mm).
- Root Opening of Joint ±1/16" (1.6 mm).
- Groove Angle of Joint +10°, -5°.

.5 FILLER METAL

.1 The filler metal shall be aluminum filler alloy 5356 certified by the Canadian Welding Bureau to ANSI/AWS 5.10 as manufactured by Alcan Canada Products Limited (or approved equivalent).

.6 SHIELDING GAS

.1 The shielding gas shall conform to the following nominal compositions: 100% ARGON having a dew point of -40°F (-40°C) or lower.

.2 Welding shall not be carried out in a draught unless protected by a shelter capable of reducing the wind velocity in the vicinity of the weld to a maximum of 5 mph.

.3 Argon gas flow rates shall be from 30 to 50 CFH (14 to 25 L/min) for the flat, horizontal and vertical positions and from 40 to 60 CFH (19 to 28 L/min) for the overhead position. The tolerance on the specified gas flow rate shall be plus 50% and minus 20%.

.4 The gas flow rates indicated on the data sheets are for manual shop conditions. When welding in a draught, it may be necessary to increase the gas flow.

.7 POSITION

.1 The welding shall preferably be done in the flat position. The horizontal, vertical, or overhead positions may be used provided approved welding procedure data sheets referring to those positions and this procedure specification are followed. Overhead welding is only permitted when the joint has suitable backing. Vertical welds shall be made with the progression of each pass in an upward direction.

.8 PREHEAT AND INTERPASS TEMPERATURES

.1 None required for this thickness range unless specified on data sheets.

.9 ELECTRICAL CHARACTERISTICS

.1 The welding current shall be direct current, reverse polarity.

.2 Current and arc voltage should not vary more than 3% during welding.

.3 Use a calibrated ammeter to set the current at the arc.

.4 Use a calibrated voltmeter connected between the contact tube and the work.

.5 For constant current (cc) Power Source, the welding current is regulated by the Power source and the arc voltage is controlled by the wire feed speed. Set the current approximately. Set the wire feed speed control to feed faster than will be necessary. Strike the arc using a scratch start and adjust the wire feed to obtain the arc voltage in the procedure. Adjust the welding current to the value given in the procedure. Adjust the arc voltage again. Check the welding current.

.6 For constant arc voltage (cav) Power Source, the arc voltage is regulated by the power source and the welding current is controlled by the wire feed speed. Set the open circuit voltage on the power source slightly in excess of the required arc voltage. Set the wire feed to run slow - about one third maximum speed. Use scratch or running wire start and adjust the wire feed speed to obtain the welding current. Adjust the arc voltage at the power source. Because this may affect welding current, you may have to readjust current and voltage several times to arrive at the setting in the procedure.

.10 WELDING TECHNIQUE

.1 Where possible, use both hands on the torch for steadier manipulation. The arc should at all times be completely outside the gas nozzle so that it does not overheat the torch. Hold the gas nozzle about half an inch from the work.

.2 Welding current, voltage and shielding gas flow rate shall be set within the range specified on the applicable approved welding procedure data sheet.

.3 The work angle should be kept at 45° from the plane of each component of the joint for tee joints and at 90° from the plane of the work for butt joints. A forehand angle of 10° to 15° is recommended.

.4 A short arc should be used to deposit the root pass to provide complete penetration. Subsequent passes can be deposited using a slightly longer arc.

.5 Use a back stepping technique when starting or breaking the arc to avoid cold starts and excessive crater depths.

.6 Stringer beads are recommended for all passes. Relatively high travel speeds are required to give acceptable weld bead profiles. The electrode wire should be held such that it points slightly upwards for horizontal groove welding. Concentrate the arc and thus the heat of welding slightly toward the thicker section when welding joints with dissimilar base metal thicknesses.

.7 Where a butt joint is manually welded from both sides, gouging of the reverse side is necessary. Back gouge with a round-nose chisel with 60° included angle until sound metal is reached.

.11 CLEANING

.1 Clean all joints in accordance with Clause 4.7 and Table 2.0 in Section 1.0 of these Standards.

.2 Safety Note: Do not use poly chlorinated hydrocarbons such as carbon tetrachloride (CCl), etc.

.12 INSPECTION OF WELD

.1 All deposited intermediate and final weld beads shall be inspected for defects. All defects shall be removed and/or rewelded prior to depositing subsequent passes and completion of the weld.

.2 Weld quality shall meet the requirements of the applicable project specifications, referenced standards, and Section 1.0 of the Aluminum Welding Standards.

.3 Overlap and excess convexity shall be repaired by removing the excess weld metal.

.4 Excess concavity of welds of craters, undersize welds and undercutting shall be repaired by depositing additional weld metal in accordance with this procedure.

.5 Excess porosity, excess slag inclusions, incomplete fusion or cracks shall be repaired by determining the extent of the defect by suitable means, removing the defective area, and rewelding in accordance with this procedure.

.6 All repairs shall be subject to the same quality requirements used during the original inspection.

3.2 INSTALLATION OF LADDERS/LANDINGS

.1 Install plumb and true in exact locations, using welded connections wherever possible to provide rigid structure. Provide anchor bolts, bolts and plates for connecting ladders to structure and landings as detailed.

END OF SECTION

PART 1 GENERAL

1.1 REFERENCES

.1 Codes and standards referenced in this section refer to the latest edition thereof.

.2 Canadian General Standards Board (CGSB).

.1 CAN/CGSB-37.4, Fibrated, Cutback Asphalt, Lap Cement for Asphalt Roofing.

.2 CAN/CGSB-37.5, Cutback Asphalt Plastic Cement.

.3 Canadian Roofing Contractors' Association (CRCA).

.1 CRCA Roofing Specification Manual.

.4 Canadian Standards Association (CSA International).

.1 CAN/CSA-A123.1/A123.5, Asphalt Shingles Made From Organic Felt and Surfaced With Mineral Granules/Asphalt Shingles Made From Glass Felt and Surfaced With Mineral Granules.

.2 CSA A123.2, Asphalt-Coated Roofing Sheets.

.3 CAN/CSA-A123.3, Asphalt Saturated Organic Roofing Felt.

.4 CAN3-A123.51, Asphalt Shingle Application on Roof Slopes 1:3 and Greater.

.5 CAN3-A123.52, Asphalt Shingle Application on Roof Slopes 1:6 to Less Than 1:3.

.6 CSA B111, Wire Nails, Spikes and Staples.

.5 National Research Council Canada (NRC)/Institute for Research in Construction (IRC) - Canadian Construction Materials Centre (CCMC).

.1 CCMC, Registry of Product Evaluations.

1.2 SAMPLES

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

.2 Submit duplicate samples of full size specified shingles.

1.3 EXTRA MATERIALS

.1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.

.2 Provide 2 unopened bundles of shingles. Store as directed by Departmental Representative.

1.4 SUBMITTALS

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

.2 Manufacturer's Instructions: Provide to indicate special handling criteria, installation sequence, cleaning procedures.

.3 Submit product data sheets for asphalt shingles. Include:

.1 Product characteristics.

.2 Performance criteria.

.3 Installation instructions.

.4 Limitations.

.5 Colour and finish.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Provide and maintain dry, off-ground weatherproof storage.

.2 Remove only in quantities required for same day use.

1.6 WARRANTY

.1 Shingles: 25 year manufacturer’s warranty.

PART 2 PRODUCTS

2.1 MATERIALS

.1 Asphalt shingles: to CSA A123.1/A123.5.

.1 Type: self-seal, standard, pattern rectangular.

.2 Mass: minimum 33 kg/3m².

.3 Colors: as selected by Departmental Representative.

.2 Roofing underlay: self-adhesive, non-woven glass fibre matt coated with SBS modified bitumen, minimum thickness 1.8 mm, bottom surface release film, top surface sanded.

.3 Plastic Cement: to CAN/CGSB-37.5.

PART 3 EXECUTION

3.1 APPLICATION

.1 Do asphalt shingle work in accordance with CAN3-A123.51 CAN3-A123.52, NBC/CRCA Specification, except where otherwise specified.

.2 Install layer of self-adhesive roof underlay over entire roof area.

.3 Install drip edge along eaves, overhanging 12 mm, with minimum 50 mm flange extending onto roof decking. Nail to deck at 400 mm oc.

.4 Install bottom step flashing (soaker base flashing) interleafed between shingles at vertical junctions.

.5 Install asphalt shingles on roof slopes 1:3 and steeper in accordance with CAN3-A123.51.

END OF SECTION

PART 1 GENERAL

1.1 REFERENCES

.1 Codes and standards referenced in this section refer to the latest edition thereof.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-11.3, Hardboard.

.2 CAN/CGSB-11.5, Hardboard, Precoated, Factory Finished, for Exterior Cladding.

.3 CAN/CGSB-11.6, Installation of Exterior Hardboard Cladding.

.4 CAN/CGSB-51.32, Sheathing, Membrane, Breather Type.

.3 Canadian Standards Association (CSA)

.1 CSA B111, Wire Nails, Spikes and Staples.

.2 CSA O121, Douglas Fir Plywood.

.3 CSA O151, Canadian Softwood Plywood.

.4 NLGA Standard Grading Rules for Canadian Lumber.

1.2 SAMPLES

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

.2 Submit duplicate 300 mm long sample of profile specified.

1.3 SHOP DRAWINGS

.1 Submit Shop Drawings in accordance with Section 01 33 00 – Submittal Procedures.

.2 Submit product information, color options for selection by Departmental Representative, and installation instructions. Incorporate approved shop drawings in Operation and Maintenance Manual.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Deliver siding suitably packaged to avoid damage to finished surface.

.2 Store in an unheated structure or under cover until application. Siding may be temporarily stored outside if at least 4 inches off the ground and on a flat, well drained surface protected from moisture with a shed pack or waterproof cover.

1.5 QUALITY ASSURANCE

.1 If requested, provide Certificate of Quality Compliance from siding manufacturer upon completion of fabrication.

.2 If requested, provide Certificate of Quality Compliance upon satisfactory completion of installation.

1.6 WARRANTY

.1 Warranty Period: 15 years against cracking, peeling, blistering, chalking, loss of coating adhesion, yellowing with age, and no damage caused by rinse cleaning surface dirt. Warranty to extend from date of Substantial Completion.

PART 2 PRODUCTS

2.1 MATERIALS

.1 Clapboard Siding: Western Lodgepole Pine or Eastern Spruce, No. 1 select or better grade, factory finished, saw texture, rabbeted bevel profile, cove or V-joint pattern, free of large knots, knot holes, or loose knots, maximum moisture content of 12%. Size: 5/8 inch (16mm) thickness, 6 inch (150mm) width. Cape Cod siding will be the standard of acceptance.

.2 Moldings and trim: Western Lodgepole Pine or Eastern Spruce, No. 1 select or better grade, factory finished same as siding, as indicated on drawings.

.3 Strapping: Softwood Lumber, kiln dried, pressure treated.

.4 Nails: Mechanically galvanized, to securely and rigidly retain the work permanently in position, pre-finished baked-on coating to match siding finish.

.5 Exterior Sheathing Membrane: CAN/CGSB 51.32m, Spun bonded olefin sheeting, conforming to ASTM D3575, single ply laminated and coated.

.6 Sealant: thermoplastic, color to exactly match siding.

2.2 FINISH

.1 Pre-finish color: thermoplastic acrylic latex emulsion, factory coated under controlled environment conditions by a modified vacuum coat method, one prime coat and one finish coat, applied to all board surfaces, minimum 6 mil (0.15mm) dry film thickness.

.2 Standard color or custom color from manufacturer's range of colors (intent is to match the existing).

.3 Touch-Up Paint: thermoplastic acrylic latex emulsion, same type and color as siding.

PART 3 EXECUTION

3.1 INSTALLATION

.1 Verify that substrate surfaces and wall openings are ready to receive work.

.2 Install one layer of sheathing membrane horizontally on sheathed walls, weather lap edges and ends minimum 6 inches (150mm). Stagger vertical laps. Tape all edges.

.3 Install strapping at 406 mm o.c., where required to meet manufacturer's recommendations.

.4 Apply sealant around window, door and other opening frames.

.5 Install siding and accessories to manufacturer's printed instructions.

.6 Install screen at bottom of base trim.

.7 Install siding for natural watershed.

.8 Install siding in straight aligned lengths, set level with plumb ends and corners.

.9 Achieve siding joints no less than 32 inches (812 mm) apart in adjoining boards and distribute evenly over wall surface.

.10 Miter external and internal corners: Install corner strips, closures, frieze boards skirt boards and trim.

.11 Fasten siding securely to wood batten substrate.

.12 Face nail 1 inch (25mm) from bottom of siding board directly into wood strapping, drive nail head just flush with siding surface; do not indent or penetrate painted coating.

.13 Carefully set exposed nails flush with siding coating.

.14 Touch-up blemished siding materials to match siding color.

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

.1 Materials, preparation and application for caulking and sealants.

1.2 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

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

1.3 REFERENCES

.1 American Society for Testing and Materials International, (ASTM)

.1 ASTM C919, Standard Practice for Use of Sealants in Acoustical Applications.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-19.13, Sealing Compound, One-component, Elastomeric, Chemical Curing.

.3 Department of Justice Canada (Jus)

.1 Canadian Environmental Protection Act (CEPA).

.4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

.5 Transport Canada (TC)

.1 Transportation of Dangerous Goods Act (TDGA).

1.4 SUBMITTALS

.1 Manufacturer's product to describe.

.1 Caulking compound.
.2 Primers.
.3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.
.4 Installation instructions, surface preparation and product limitations.

.2 Submit duplicate samples of each type of material and colour.

.3 Cured samples of exposed sealants for each color where required to match adjacent material.

.4 Manufacturers' instructions to include installation instructions for each product used.

1.5 DELIVERY, STORAGE, AND HANDLING

.1 Deliver, handle, store and protect materials in accordance with Section 01 61 00 - Common Product Requirements.

.2 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture, water and contact with ground or floor.

1.6 PROJECT CONDITIONS

.1 Environmental Limitations:

.1 Do not proceed with installation of joint sealants under following conditions:

.1 When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 4.4˚C.

.2 When joint substrates are wet.

.2 Joint-Width Conditions:

.1 Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.

.3 Joint-Substrate Conditions:

.1 Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

PART 2 PRODUCTS

2.1 SEALANT MATERIALS

.1 Sealants and Caulking compounds must:

.1 Meet or exceed all applicable governmental and industrial safety and performance standards; and

.2 Be manufactured and transported in such a manner that all steps fo the process, including the disposal of waste products arising therefrom, will meet the requirements of all applicable governmental acts, by laws and regulations including, for facilities located in Canada, the Fisheries Act and the Canadian Environmental Protection Act (CEPA).

.2 Sealant and caulking compounds must not be formulated or manufactured with: aromatic solvents, fibrous talc or asbestos, formaldehyde, halogenated solvents, mecury, lead, cadium, hexavalent chromium, barium or their compounds, except barium sulphate.

.3 Sealant and caulking compounds must no contain a total of volatile organic compound (VOC’s) in excess of 5% by height as calculated from records of the amounts of constituents used to make the product.

.4 Sealant and caulking compounds must be accompanied by detailed instructions for proper application so as to minimize health concerns and maximize performance, and information describing proper disposal methods.

.5 Do not use caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant in air handling units.

.6 When low toxicity caulks are not possible, confine usage to areas which off-gas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize off-gas time.

.7 Where sealants are qualified with primers use only these primers.

.8 Sealants acceptable for use on this project must be listed on CGSB Qualified Products List issued by CGSB Qualification Board for Joint Sealants. Where sealants are qualified with primers use only these primers.

2.2 SEALANT MATERIAL DESIGNATIONS

.1 Urethanes One Part.

.1 Non-Sag to CAN/CGSB-19.13, Type 2.

.2 Silicones One Part.

.1 To CAN/CGSB-19.13, mildew resistant.

.3 Acoustical Sealant.

.1 To ASTM C919.

.4 Preformed Compressible and Non-Compressible back-up materials.

.1 Polyethylene, Urethane, Neoprene or Vinyl Foam.

.1 Extruded closed cell foam backer rod.

.2 Size: oversize 30 to 50 %.

.2 Neoprene or Butyl Rubber.

.1 Round solid rod, Shore A hardness 70.

.3 High Density Foam.

.1 Extruded closed cell polyvinyl chloride (PVC), extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 to 200 kPa, extruded polyolefin foam, 32 kg/m^3 density, or neoprene foam backer, size as recommended by manufacturer.

.4 Bond Breaker Tape.

.1 Polyethylene bond breaker tape which will not bond to sealant.

2.3 SEALANT SELECTION

.1 Perimeters of exterior openings where frames meet exterior facade of building, Sealant type CAN/CGSB- 19.13.

.2 Seal interior perimeters of exterior openings as detailed on drawings: Sealant type: CAN/CGSB – 19.13.

2.4 JOINT CLEANER

.1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant manufacturer.

.2 Primer: as recommended by manufacturer.

PART 3 EXECUTION

3.1 PROTECTION

.1 Protect installed Work of other trades from staining or contamination.

3.2 SURFACE PREPARATION

.1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.

.2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair work.

.3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.

.4 Ensure joint surfaces are dry and frost free.

.5 Prepare surfaces in accordance with manufacturer's directions.

3.3 PRIMING

.1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.

.2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

3.4 BACKUP MATERIAL

.1 Apply bond breaker tape where required to manufacturer's instructions.

.2 Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.

3.5 MIXING

.1 Mix materials in strict accordance with sealant manufacturer's instructions.

3.6 APPLICATION

.1 Sealant.

- .1 Apply sealant in accordance with manufacturer's written instructions.
- .2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
- .3 Apply sealant in continuous beads.
- .4 Apply sealant using gun with proper size nozzle.
- .5 Use sufficient pressure to fill voids and joints solid.
- .6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
- .7 Tool exposed surfaces before skinning begins to give slightly concave shape.
- .8 Remove excess compound promptly as work progresses and upon completion.

.2 Curing.

- .1 Cure sealants in accordance with sealant manufacturer's instructions.
- .2 Do not cover up sealants until proper curing has taken place.

.3 Cleanup.

- .1 Clean adjacent surfaces immediately and leave Work neat and clean.
- .2 Remove excess and droppings, using recommended cleaners as work progresses.
- .3 Remove masking tape after initial set of sealant.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

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

.3 Section 07 92 00 - Joint Sealants.

.4 Section 08 71 00 - Door Hardware.

.5 Section 08 80 50 – Glazing.

.6 Section 09 91 13 - Painting.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM)

.1 ASTM A653/A653M, Specification for Steel Sheet Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvanized) by the Hot Dip Process.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-1.181, Ready-Mixed Organic Zinc-Rich Coating.

.2 CGSB 41-GP-19Ma, Rigid Vinyl Extrusions for Windows and Doors.

.3 Canadian Standards Association (CSA)

.1 G40.20/G40.21, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

.2 CSA W59, Welded Steel Construction (Metal Arc Welding).

.4 Canadian Steel Door Manufacturers' Association, (CSDMA).

.1 CSDMA, Specifications for Commercial Steel Doors and Frames.

.2 CSDMA, Recommended Selection and Usage Guide for Commercial Steel Doors.

.5 National Fire Protection Association (NFPA)

.1 NFPA 80, Standard for Fire Doors and Fire Windows.

.2 NFPA 252, Standard Methods of Fire Tests of Door Assemblies.

.6 Underwriters' Laboratories of Canada (ULC)

.1 CAN4-S104M, Fire Tests of Door Assemblies.

.2 CAN4-S105M, Fire Door Frames Meeting the Performance Required by CAN4-S104.

.3 CAN/ULC-S701, Thermal Insulation, Polystyrene, Boards and Pipe Covering.

.4 CAN/ULC-S702, Thermal Insulation, Mineral Fibre, for Buildings.

.5 CAN/ULC-S704, Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.

1.3 DESIGN REQUIREMENTS

.1 Design door assembly to withstand minimum 1,000,000 swing cycles in accordance with ANSI A151.1, with no failure of any design features of the door.

.2 Design exterior frame assembly to accommodate to expansion and contraction when subjected to minimum and maximum surface temperature of -35°C to 35°C.

.3 Maximum deflection for exterior steel entrance screens under wind load of 1.2 kPa not to exceed 1/175th of span.

.4 Steel fire rated doors and frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4-S104 and NFPA 252 for ratings specified or indicated.

.5 Provide fire labelled frames for openings requiring fire protection ratings. Test products in conformance with CAN4-S104 and NFPA 252 and listed by nationally recognized agency having factory inspection services and construct as detailed in Follow-Up Service Procedures/Factory Inspection Manuals issued by listing agency to individual manufacturers.

1.4 SUBMITTALS

.1 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, glazed, louvred, arrangement of hardware and fire rating and finishes.

.2 Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings and reinforcing firerating and finishes.

.3 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.

1.5 DELIVERY STORAGE AND HANDLING

.1 Deliver, store, handle and protect doors and frames in accordance with Section 01 61 00-Common Product Requirements.

.2 Deliver, handle and store doors and frames at the job site in such a manner as to prevent damage.

.3 Store doors and frames under cover with doors stored in a vertical position on blocking, clear of floor and with blocking between doors to permit air circulation.

1.6 QUALITY ASSURANCE

.1 Conform to requirements to ANSI A117.1

.2 Company specializing in manufacturing products specified with a minimum of five (5) years documented experience.

1.7 WARRANTY

.1 Provide a written warranty for work of this section from manufacturer for failure due to defective materials and from contractor for failure due to defective installation workmanship, for one (1) year respectively from the date of Substantial Completion.

PART 2 PRODUCTS

2.1 MATERIALS

.1 Hot dipped galvanized steel sheet: to ASTM A653/A653M, ZF75, minimum base steel thickness in accordance with CSDMA Table 1 - Thickness for Component Parts.

.2 Reinforcement channel: to CSA G40.20/G40.21, Type 44W, coating designation to ASTM A653/A653M, ZF75.

2.2 DOOR CORE MATERIALS

.1 Stiffened: face sheets welded insulated core.

.1 Expanded polystyrene: CAN/ULC-S701, density 16 to 32 kg/m^3.

.2 Temperature rise rated (TRR): core composition to limit temperature rise on unexposed side of door to 250°C at 60 minutes. Core to be tested as part of a complete door assembly, in accordance with CAN4-S104, ASTM E152 or NFPA 252, covering Standard Method of Tests of Door Assemblies and listed by nationally recognized testing agency having factory inspection service.

.3 Thermal Insulation material must:

.1 Not require being labelled as poisonous, corrosive, flammable or explosive under the Consumer Chemical and Container Regulations of the Hazardous Products Act.

.2 Be manufactured using a process that uses chemical compounds with the minimum zone depletion potential (ODP) available.

2.3 ADHESIVES

.1 Polystyrene and polyurethane cores: heat resistant, epoxy resin based, low viscosity, contact cement.

2.4 PRIMER

.1 Touch-up prime CAN/CGSB-1.181.

2.5 ACCESSORIES

.1 Door silencers: single stud rubber/neoprene type.

.2 Exterior top and bottom caps steel.

.3 Fabricate glazing stops as formed channel, minimum 16 mm height, accurately fitted, butted at corners and fastened to frame sections with counter-sunk oval head sheet metal screws.

.4 Door bottom seal: Section 08 71 00 – Door Hardware.

.5 Metallic paste filler: to manufacturer's standard.

.6 Fire labels: metal riveted.

.7 Sealant: Section 07 92 00 – Joint Sealants.

.8 Provide low expanding, single component polyurethane foam sealant installed at head and jamb perimeter of door frame for sealing to building air barrier, vapour retarder and door frame. Foam sealant width to be adequate to provide required air tightness and vapour diffusion control to building air barrier and vapour retarder foam interior. Refer to Section 07 21 20 – Low Expanding Foam Sealant.

.9 Glazing: Section 08 80 50 – Glazing.

.10 Make provisions for glazing as indicated and provide necessary glazing stops.

.1 Provide removable stainless steel glazing beads for dry glazing of snap-on type.

.2 Design exterior glazing stops to be tamperproof.

.11 Finish Painting: to Section 09 91 13 - Painting.

2.6 FRAMES FABRICATION GENERAL

.1 Fabricate frames in accordance with CSDMA specifications.

.2 Fabricate frames to profiles and maximum face sizes as indicated.

.3 Exterior frames: 1.2 mm welded, thermally broken type construction.

.4 Interior frames: 1.2 mm welded type construction.

.5 Blank, reinforce, drill and tap frames for mortised, template hardware, and electronic hardware using templates provided by finish hardware supplier. Reinforce frames for surface mounted hardware.

.6 Protect mortised cutouts with steel guard boxes.

.7 Prepare frame for door silencers, 3 for single door, 2 at head for double door.

.8 Manufacturer's nameplates on frames and screens are not permitted.

.9 Conceal fastenings except where exposed fastenings are indicated.

.10 Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.

.11 Insulate exterior frame components with polyurethane insulation.

2.7 FRAME ANCHORAGE

.1 Shim and anchor new doors in accordance with CAN/CSA A440.4.

.2 Provide appropriate anchorage to floor and wall construction.

.3 Locate each wall anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb.

.4 Provide 2 anchors for rebate opening heights up to 1520 mm and 1 additional anchor for each additional 760 mm of height or fraction thereof.

.5 Locate anchors for frames in existing openings not more than 150 mm from top and bottom of each jambs and intermediate at 660 mm o.c. maximum.

2.8 FRAMES: WELDED TYPE

.1 Welding in accordance with CSA W59.

.2 Accurately mitre or mechanically joint frame product and securely weld on inside of profile.

.3 Cope accurately and securely weld butt joints of mullions, transom bars, centre rails and sills.

.4 Grind welded joints and corners to a flat plane, fill with metallic paste and sand to uniform smooth finish.

.5 Securely attach floor anchors to inside of each jamb profile.

.6 Weld in 2 temporary jamb spreaders per frame to maintain proper alignment during shipment.

2.9 DOOR FABRICATION GENERAL

.1 Doors: swing type, flush, with provision for glass and/or louvre openings as indicated.

.2 Exterior doors: insulated, hollow steel construction.

.3 Fabricate doors with longitudinal edges locked seam. Seams: grind welded joints to a flat plane, fill with metallic paste filler and sand to a uniform smooth finish.

.4 Doors: manufacturers' proprietary construction, tested and/or engineered as part of a fully operable assembly, including door, frame, gasketing and hardware in accordance with ASTM E330.

.5 Blank, reinforce, drill doors and tap for mortised, templated hardware and electronic hardware.

.6 Factory prepare holes 12.7 mm diameter and larger except mounting and through-bolt holes, on site, at time of hardware installation.

.7 Reinforce doors where required, for surface mounted hardware. Provide flush steel top caps to exterior doors. Provide inverted, recessed, spot welded channels to top and bottom of interior doors.

.8 Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.

.9 Provide fire labelled doors for those openings requiring fire protection ratings, as scheduled. Test such products in strict conformance with CAN4-S104 ASTM E152 NFPA 252 and list by nationally recognized agency having factory inspection service and construct as detailed in Follow-Up Service Procedures/Factory Inspection Manuals issued by listing agency to individual manufacturers.

.10 Manufacturer's nameplates on doors are not permitted.

2.10 HOLLOW STEEL CONSTRUCTION

.1 Form each face sheet for exterior doors from 1.2 mm sheet steel.

.2 Form each face sheet for interior doors from 1.2 sheet steel.

.3 Reinforce doors with vertical stiffeners, securely welded to each face sheet at 150 mm on centre maximum.

.4 Fill voids between stiffeners of exterior doors with insulation as specified.

2.11 THERMALLY BROKEN DOORS AND FRAMES

.1 Fabricate thermally broken doors by using insulated core and separating exterior parts from interior parts with continuous interlocking thermal break.

.2 Thermal break: rigid polyvinyl chloride extrusion conforming to CGSB 41-GP-19Ma.

.3 Fabricate thermally broken frames separating exterior parts form interior parts with continuous interlocking thermal break.

.4 Apply insulation.

PART 3 EXECUTION

3.1 INSTALLATION GENERAL

.1 Install labelled steel fire rated doors and frames to NFPA 80 except where specified otherwise.

.2 Install doors and frames to CSDMA Installation Guide.

3.2 FRAME INSTALLATION

.1 Set frames plumb, square, level and at correct elevation.

.2 Secure anchorages and connections to adjacent construction.

.3 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical support at centre of head for openings over 1200 mm wide. Remove temporary spreaders after frames are built-in.

.4 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.

.5 Caulk perimeter of frames between frame and adjacent material.

.6 Maintain continuity of air barrier and vapour retarder.

3.3 DOOR INSTALLATION

.1 Install doors and hardware in accordance with hardware templates and manufacturer's instructions and Section 08 71 00 - Door Hardware.

.2 Provide even margins between doors and jambs and doors and finished floor as follows.

.1 Hinge side: 1.0 mm.

.2 Latch side and head: 1.5 mm.

.3 Finished floor: 13 mm.

.3 Adjust operable parts for correct function.

.4 Install louvres.

3.4 FINISH REPAIRS

.1 Touch up with primer finishes damaged during installation.

.2 Fill exposed frame anchors and surfaces with imperfections with metallic paste filler and sand to a uniform smooth finish.

3.5 COMMISSIONING

.1 Contractor to instruct maintenance personnel in operation and maintenance of doors and hardware.

.2 Confirm operation and function for all doors and hardware.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

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

.3 Section 01 78 00 - Closeout Submittals.

.4 Section 07 26 00 - Vapour Retarders.

.5 Section 07 92 00 - Joint Sealants.

.6 Section 08 80 50 - Glazing.

1.2 REFERENCES

.1 Aluminum Association (AA),

.1 AA-DAF 45, Designation System for Aluminum Finishes.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-1.40, Anticorrosive Structural Steel Alkyd Primer.

.2 CAN/CGSB-79.1, Insect Screens.

.3 Canadian Standards Association (CSA)

.1 CSA-A440-00/A440.1, A440, Windows / Special Publication A440.1, User Selection Guide to CSA Standard A440, Windows.

.2 CAN/CSA-Z91, Health and Safety Code for Suspended Equipment Operations.

1.3 SUBMITTALS

.1 Indicate materials and details in full size scale for head, jamb and sill, profiles of components, interior and exterior trim junction between combination units, elevations of unit, anchorage details, location of isolation coating, description of related components and exposed finishes fasteners, and caulking. Indicate location of manufacturer's nameplates.

1.4 TEST REPORTS

.1 Submit test reports from approved independent testing laboratories, certifying compliance with specifications, for:

.1 Windows classifications

.2 Air tightness

.3 Water tightness

.4 Wind load resistance
.5 Condensation resistance
.6 Forced entry resistance
.7 Insect screens
.8 Glazing
.9 Safety drop - vertical sliding windows only
.10 Sash strength and stiffness
.11 Ease of operation - windows with operable lights
.12 Mullian deflection - combination and composite windows
.13 Anodized finish
.14 Block operation - sliding windows only

1.5 CLOSEOUT SUBMITTALS

.1 Provide operation and maintenance data for windows for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.6 WARRANTY

.1 Provide a written warranty for work under this section from manufacturer for failure due to defective materials and from contractor for failure due to defective installation and workmanship, for five (5) years respectively from the date of Substantial Completion.

PART 2 PRODUCTS

2.1 MATERIALS

.1 Materials: to CSA-A440/A440.1 supplemented as follows:

.2 All aluminum windows by same manufacturer.

.3 Sash: aluminum thermally broken.

.4 Main frame: aluminum thermally broken.

.5 Glass: in accordance with Section 08 80 50 – Glazing.

.6 Exterior metal sills: extruded aluminum of type and size to suit job conditions; minimum 3 mm thick, complete with joint covers, jamb drip deflectors, chairs, anchors, anchoring devices.

.7 Isolation coating: alkali resistant bituminous paint.

2.2 WINDOW TYPE AND CLASSIFICATION

.1 Types:

.1 Fixed: with insulating glass and ventilator. Standard of Acceptance: Alumicor Fixed 900 Series c/w Alumicor Rotovent SV2000 speciality ventilator or approved equal.

.2 Classification rating: to CSA-A440/A440.1 for various regions of Newfoundland and Labrador as follows:

.1	Argentia	A3, B5, C4, I40, F1, S1
.2	Bonavista	A3, B6, C3, I40, F1, S1
.3	Cape Harrison	A3, B5, C3, I40, F1, S1
.4	Cape Race	A3, B6, C3, I40, F1, S1
.5	Churchill Falls	A3, B2, C2, I43, F1, S1
.6	Buchans	A3, B3, C3, I40, F1, S1
.7	Corner Brook	A3, B5, C4, I40, F1, S1
.8	Gander	A3, B4, C3, I40, F1, S1
.9	Goose Bay	A3, B3, C3, I40, F1, S1
.10	Grand Bank	A3, B6, C4, I40, F1, S1
.11	Grand Falls	A3, B4, C3, I40, F1, S1
.12	Labrador City	A3, B2, C2, I43, F1, S1
.13	Port aux Basques	A3, B6, C4, I40, F1, S1
.14	St. Anthony	A3, B6, C4, I40, F1, S1
.15	St. John's	A3, B6, C4, I40, F1, S1
.16	Stephenville	A3, B5, C4, I40, F1, S1
.17	Wabana	A3, B6, C4, I40, F1, S1
.18	Wabush	A3, B2, C2, I43, F1, S1

.3 Energy ratings: windows to be Energy Star certified to Canadian Standards Association for various regions of Newfoundland and Labrador as follows:

.1 Island Region (excluding Northern Peninsula).

.1 Zone B.

.2 Northern Peninsula of Island Region and Labrador Region (excluding Northern Labrador – Natuashish and North).

.1 Zone C.

.3 Northern Labrador – Natuashish and North.

.1 Zone D.

2.3 FABRICATION

.1 Fabricate in accordance with CSA-A440/A440.1 supplemented as follows:

.2 Fabricate units square and true with maximum tolerance of plus or minus 1.5 mm for units with a diagonal measurement of 1800 mm or less and plus or minus 3.0 mm for units with a diagonal measurement over 1800 mm.

.3 Face dimensions detailed are maximum permissible sizes.

.4 Brace frames to maintain squareness and rigidity during shipment and installation.

.5 Finish steel clips and reinforcement with 380 g/m^2 zinc coating to CAN/CGSB-1.40.

2.4 ALUMINUM FINISHES

.1 Finish exposed surfaces of aluminum components in accordance with Aluminum Association Designation System for Aluminum Finishes.

.1 Clear anodic finish: designation to match AA-M10C22A31.

2.5 ISOLATION COATING

.1 Isolate aluminum from following components, by means of isolation coating:

.1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.

.2 Concrete, mortar and masonry.

.3 Wood.

2.6 GLAZING

.1 Glaze windows in accordance with CSA-A440/A440.1 and Section 08 80 50 - Glazing.

PART 3 EXECUTION

3.1 WINDOW INSTALLATION

.1 Install in accordance with CSA-A440.

.2 Arrange components to prevent abrupt variation in colour.

3.2 SILL INSTALLATION

.1 Install metal sills with uniform wash to exterior, level in length, straight in alignment with plumb upstands and faces. Use one piece lengths at each location.

.2 Cut sills to fit window opening.

.3 Secure sills in place with anchoring devices located at ends joints of continuous sills and evenly spaced 600 mm oc in between.

.4 Fabricate and install sills to provide minimum 2% slope away from window.

.5 Fasten drip deflectors with self tapping stainless steel screws.

.6 Maintain 6.0 to 9.0 mm space between butt ends of continuous sills. For sills over 1200 mm in length, maintain 3.0 to 6.0 mm space at each end.

3.3 CAULKING

.1 Seal joints between windows and window sills with sealant. Bed sill expansion joint cover plates and drip deflectors in bedding compound. Caulk between sill upstand and window-frame. Caulk butt joints in continuous sills.

.2 Apply sealant in accordance with Section 07 92 00 - Joint Sealants. Conceal sealant within window units except where exposed use is permitted by Owner's Representative.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

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

.3 Section 01 78 00 - Closeout Submittals.

.4 Section 08 11 14- Metal Doors & Frames.

1.2 REFERENCES

.1 American National Standards Institute (ANSI) / Builders Hardware Manufacturers Association (BHMA)

.1 ANSI/BHMA A156.1, American National Standard for Butts and Hinges.
.2 ANSI/BHMA A156.2, Bored and Preassembled Locks and Latches.
.3 ANSI/BHMA A156.3, Exit Devices.
.4 ANSI/BHMA A156.4, Door Controls - Closers.
.5 ANSI/BHMA A156.5, Auxiliary Locks and Associated Products.
.6 ANSI/BHMA A156.6, Architectural Door Trim.
.7 ANSI/BHMA A156.8, Door Controls - Overhead Stops and Holders.
.8 ANSI/BHMA A156.12, Interconnected Locks and Latches.
.9 ANSI/BHMA A156.13, Mortise Locks and Latches Series 1000.
.10 ANSI/BHMA A156.14, Sliding and Folding Door Hardware.
.11 ANSI/BHMA A156.15, Release Devices - Closer Holder, Electromagnetic and Electromechanical.
.12 ANSI/BHMA A156.16, Auxiliary Hardware.
.13 ANSI/BHMA A156.17, Self-closing Hinges and Pivots.
.14 ANSI/BHMA A156.18, Materials and Finishes.
.15 ANSI/BHMA A156.19, Power Assist and Low Energy Power - Operated Doors.

.2 Canadian Steel Door and Frame Manufacturers' Association (CSDFMA)

.1 CSDFMA Recommended Dimensional Standards for Commercial Steel Doors and Frames.

1.3 SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's printed product literature, specifications and data sheet.

.2 Samples:

.1 Identify each sample by label indicating applicable specification paragraph number, brand name and number, finish and hardware package number.

.2 After approval samples will be returned for incorporation in the Work.

.3 Hardware List:

.1 Submit contract hardware list.

.2 Indicate specified hardware, including make, model, material, function, size, finish and other pertinent information.

.4 Manufacturer's Instructions:

.1 Submit manufacturer's installation instructions.

.5 Closeout Submittals

.1 Provide operation and maintenance data for door closers, locksets, door holders electrified hardware and fire exit hardware for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.4 MAINTENANCE MATERIALS

.1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.

.2 Supply two sets of wrenches for door closers, locksets and fire exit hardware.

1.5 WARRANTY

.1 Provide a written manufacturer’s warranty for work of this Section for failure due to defective materials for ten (10) years, dated from substantial completion certificate.

.2 Provide a written Contractor’s warranty for work of this Section for failure due to defective installation workmanship for one (1) year, dated from submittal completion certificate.

1.6 QUALITY ASSURANCE

.1 Regulatory Requirements:

.1 Hardware for doors in fire separations and exit doors certified by a Canadian Certification Organization accredited by Standards Council of Canada.

.2 Only products meeting ANSI/BHMA standards are acceptable. Items that are equal in design, function and quality will be accepted upon approval of the Owner’s Representative.

.3 Only recognized contract hardware distributors will be considered for the work of this section. The distributor shall have on staff a qualified Architectural Hardware Consultant recognized by the Door and Hardware Institute or a person with equivalent qualifications to assist installers and direct detailing, processing and delivery of material, and certify installation acceptance.

1.7 DELIVERY, STORAGE, AND HANDLING

.1 Deliver, store, handle and protect materials in accordance with Section 01 61 00 - Common Product Requirements.

.2 Store finishing hardware in locked, clean and dry area.

.3 Package each item of hardware including fastenings, separately or in like groups of hardware, label each package as to item definition and location.

1.8 MAINTENANCE SERVICE

.1 Provide maintenance service for one year during warranty period to maintain all barrier free entrance automatic operators as follows:

.1 Qualified service personal approved by manufacturer of operators.

.2 Site inspection every three months will all necessary adjustment made during this visit. Separate warranty service calls, if required, will only qualify as an inspection if time of call is close to the three month intervals.

.3 Make detailed reports of each visit and copy to Owner and Engineer.

.4 Cost of this service will be included as part of this Section and is not covered by any allowance amount.

PART 2 PRODUCTS

2.1 HARDWARE ITEMS

.1 Only door locksets and latches listed on ANSI/BHMA Standards list are acceptable for use on this project.

.2 Use one manufacturer's products only for similar items.

2.2 DOOR HARDWARE

.1 Locks and latches:

.1 Bored and preassembled locks and latches: to ANSI/BHMA A156.2, 4000 bored lock, grade 1, designed for function and keyed as stated in Hardware Schedule.

.2 Mortise locks and latches: to ANSI/BHMA A156.3, series 1000 mortise lock, designed for function and keyed as stated in Hardware Schedule.

.3 Knobs Lever handles : plain design.

.4 Roses: round.

.5 Normal strikes: box type, lip projection not beyond jamb.

.6 Cylinders: key into keying system as directed.

.7 All corresponding cylinders to be removable.

.8 Finished to BHMA 626.

.2 Butts and hinges:

.1 Butts and hinges: to ANSI/BHMA A156.1, designated by letter A and numeral identifiers, followed by size and finish, listed in Hardware Schedule.

.3 Door Closers and Accessories:

.1 Door controls (closers): to ANSI/BHMA A156.4, designated by letter C and numeral identifiers listed in Hardware Schedule.

.4 Thresholds: to ANSI/BHMA A156.21 extruded aluminum mill finish, serrated surface, with lip and vinyl door seal insert.

.5 Weatherstripping:

.1 Head and jamb seal:

.1 Extruded aluminum frame and solid closed cell neoprene insert, clear anodized finish.

2.3 FASTENINGS

.1 Use only fasteners provided by manufacturer. Failure to comply may void warranties and applicable licensed labels.

.2 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.

.3 Exposed fastening devices to match finish of hardware.

.4 Use fasteners compatible with material through which they pass.

2.4 KEYING

.1 Provide keys in triplicate for every lock in this Contract.

2.5 FINISHES

.1 Following finishes are indicated in hardware groups.

BHMA	CAN MATERIAL	FINISH
626	C26D Brass/Bronze	Satin Chrome
628	C28 Aluminum	Satin Alum, Anodized
630	C32D Stainless Steel	Satin Stainless Steel
652	C26D Steel	Plated Satin Chrome
689	Al All	Painted Aluminum
	Alum Aluminum	Mill Finish

TMDFF (to match door and frame finish).

2.6 ABBREVIATIONS

ALD	Aluminum Door and Frame
ATMS STMS	Arm/strike To Template with Machine Screws

ASB	Arm Complete with Sex Bolts
BC	Back Check
C to C, C/L	Centerline to Centerline
Cyl	Cylinder (of a lock)
CMK	Construction Master Key
Deg.	Degree (of opening)
DEL	Delayed Action
FBB or BB	Ball bearing hinge

PART 3 EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

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

.2 Furnish metal door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.

.3 Furnish manufacturers' instructions for proper installation of each hardware component.

3.2 INSTALLATION

.1 Install hardware to standard hardware location dimensions in accordance with Canadian Metric Guide for Steel Doors and Frames (Modular Construction) prepared by Canadian Steel Door and Frame Manufacturers' Association.

.2 Where door stop contacts door pulls, mount stop to strike bottom of pull.

.3 Use of "quick" type fasteners, unless specifically supplied by manufacturer, is unacceptable.

3.3 EXAMINATION

.1 Visit site prior to start of installation of hardware.

.2 Visit will include examination of openings, site conditions and materials for conditions that prevent proper application of finish hardware.

.3 Installation will imply conditions for installation acceptable hardware contractor to accept responsibility.

3.4 ADJUSTING

.1 Adjust door hardware, operators, closures and controls for optimum, smooth operating condition, safety and for weather tight closure.

.2 Lubricate hardware, operating equipment and other moving parts.

.3 Adjust door hardware to provide tight fit at contact points with frames.

.4 Where hardware is found defective, repair or replace or correct as desired by inspection reports.

3.5 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacture's instructions.

.3 Remove protective material from hardware items where present.

.4 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

3.6 PROTECTION

.1 All hardware shall be protected against damage from paint, plaster or other defacing materials. Whenever possible manufacturers protective covering when applied, shall not be removed until final project cleaning takes place. Material not protected by manufacture shall be covered or removed from door during painting or any other adjustments that can cause damage to hardware.

3.7 HARDWARE GROUPS

.1 Provide hardware as specified. Refer to drawings.

3.8 COMMISSIONING

.1 Site inspection or visit at Substantial Completion and training follow up and inspection at commissioning as directed by Owner’s Representative.

.2 Provide 10 month warranty service.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

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

.3 Section 01 78 00 - Closeout Submittals.

.4 Section 07 82 00 – Joint Sealants.

.5 Section 08 11 14 – Metal Doors & Frames.

.6 Section 08 51 13 – Aluminum Windows.

1.2 REFERENCES

.1 American National Standards Institute (ANSI).

.1 ANSI/ASTM E330, Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

.2 American Society for Testing and Materials (ASTM)

.1 ASTM C542, Specification for Lock-Strip Gaskets.

.2 ASTM D2240, Test Method for Rubber Property – Durometer Hardness.

.3 Canadian General Standards Board (CGSB).

.1 CAN/CGSB-12.1, Tempered or Laminated Safety Glass.

.2 CAN/CGSB-12.3, Clear Float Glass

.3 CAN/CGSB-12.5, Mirrors, Silvered.

.4 CAN/CGSB-12.8, Insulating Glass Units.

.5 CAN/CGSB-12.11, Wired Safety Glass.

.4 Canadian Standards Association (CSA).

.1 CSA A440.2, Energy Performance Evaluation of Windows and Sliding Glass Doors.

.2 CSA Certification Program for Windows and Doors.

.5 Glass Association of North American (GANA)

.1 GANA Glazing Manual.

.2 GANA Laminated Glazing Reference Manual.

1.3 SYSTEM DESCRIPTION

.1 Performance Requirements:

.1 Provide continuity of building enclosure vapour and air barrier using glass and glazing materials as follow:

.1 Utilize inner light of multiple light sealed units for continuity of air and vapour seal.

.2 Size glass to withstand wind loads, dead loads and positive and negative live loads as measured in accordance with ANSI/ASTM E330 and NBC latest edition.

.3 Limit glass deflection to 1/200 with full recovery of glazing materials.

1.4 SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's printed product literature, specifications and data sheet.

.2 Manufacturer's Instructions:

.1 Submit manufacturer's installation instructions.

.3 Closeout Submittals:

.1 Provide maintenance data including cleaning instructions for incorporation into manual specified in Section 01 78 00 - Closeout Submittals

1.5 QUALITY ASSURANCE

.1 Perform work in accordance with GANA Glazing Manual and Laminated Glazing Reference Manual for glazing installation methods. Provide shop inspection and testing for glass.

.3 Provide certificate of quality compliance from manufacturer.

1.6 WARRANTY

.1 Provide ten (10) year warranty for glazing units from the date of Substantial Completion.

1.7 ENVIRONMENTAL REQUIREMENTS

.1 Install glazing when ambient temperature is 10°C minimum. Maintain ventilated environment for 24 hours after application.

.2 Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

PART 2 PRODUCTS

2.1 MATERIALS: FLAT GLASS

.1 Glazing Lantern Room:

Extruded polycarbonate glazing UV stabilized. Standard of Acceptance: Lexan XL thickness to match existing.

2.2 MATERIALS: SEALED INSULATING GLASS

.1 Insulating glass units: to CAN/CGSB-12.8, double unit, minimum 25 mm overall thickness (as per NBCC for window area and climatic conditions.)

.1 Glass: to CAN/CGSB-12.3

.2 Glass thickness: minimum 6 mm each light (as per NBCC calculations for window area and climatic conditions.)

.3 Inter-cavity space thickness: 13 mm.

.4 Glass coating: surface number 2 (inside surface of outer light), low “E”.

.5 Inert gas: argon.

.6 Light transmittance: minimum 0.70.

2.3 MATERIALS

.1 Sealant: 07 92 00 – Joint Sealants.

2.4 ACCESSORIES

.1 Setting blocks: Neoprene, 80-90 Shore A durometer hardness to ASTM D2240, minimum 100 mm x width of glazing rabbet space minus 1.5 mm x height.

.2 Spacer shims: Neoprene, 50-60 Shore A durometer hardness to ASTM D2240, 75 mm long x one half height of glazing stop x thickness to suit application. Self adhesive on one face.

.3 Glazing tape:

.1 Preformed butyl compound with integral resilient tube spacing device, 10-15 Shore A durometer hardness to ASTM D2240; coiled on release paper; black colour.

.4 Glazing splines: resilient polyvinyl chloride, extruded shape to suit glazing channel retaining slot, colour as selected.

.5 Glazing clips: manufacturer's standard type.

.6 Lock-strip gaskets: to ASTM C542.

PART 3 EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 EXAMINATION

.1 Verify that openings for glazing are correctly sized and within tolerance.

.2 Verify that surfaces of glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.

3.3 PREPARATION

.1 Clean contact surfaces with solvent and wipe dry.

.2 Seal porous glazing channels or recesses with substrate compatible primer or sealer.

.3 Prime surfaces scheduled to receive sealant.

3.4 INSTALLATION: EXTERIOR – WET/DRY METHOD (PREFORMED TAPE AND SEALANT)

.1 Perform work in accordance with GANA Glazing Manual and GANA Laminated Glazing Reference Manual for glazing installation methods.

.2 Cut glazing tape to length and set against permanent stops, 6 mm below sight line. Seal corners by butting tape and dabbing with sealant.

.3 Apply heel bead of sealant along intersection of permanent stop with frame ensuring full perimeter seal between glass and frame to complete continuity of air and vapour seal.

.4 Place setting blocks at 1/4 points, with edge block maximum 150 mm from corners.

.5 Rest glazing on setting blocks and push against tape and heel of sealant with sufficient pressure to attain full contact at perimeter of light or glass unit.

.6 Install removable stops with spacer strips inserted between glazing and applied stops 6 mm below sight line.

.7 Fill gap between glazing and stop with sealant to depth equal to bite of frame on glazing, maximum 9 mm below sight line.

.8 Apply cap head of sealant along void between stop and glazing, to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.5 INSTALLATION: INTERIOR DRY METHOD (TAPE AND TAPE)

.1 Perform work in accordance with GANA Glazing Manual and GANA Laminated Glazing Reference Manual for glazing installation methods.

.2 Cut glazing tape to length and set against permanent stops, projecting 1.6 mm above sight line.

.3 Place setting blocks at 1/4 with edge block maximum 150 mm from corners.

.4 Rest glazing on setting blocks and push against tape with sufficient pressure to attain full contact at perimeter of light or glass unit.

.5 Place glazing tape on free perimeter of glazing in same manner described in 3.4.3. Apply heel bead of sealant along intersection of permanent stop with frame ensuring full perimeter seal between glass and frame to complete continuity of air and vapour seal.

.6 Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.

.7 Knife trim protruding tape.

3.6 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Remove traces of primer, caulking.

.3 Remove glazing materials from finish surfaces.

.4 Remove labels after work is complete.

.5 Clean glass and mirrors using approved non-abrasive cleaner in accordance with manufacture's instructions.

.6 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

3.7 PROTECTION OF FINISHED WORK

.1 After installation, mark light with an "X" by using removable plastic tape or paste. Do not mark heat absorbing or reflective glass units.

.2 Repair damage to adjacent materials caused by glazing installation.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 – Submittal Procedures.

.2 Section 01 45 00 - Quality Control.

.3 Section 01 61 00 - Common Product Requirements.

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

.5 Section 01 78 00 – Closeout Submittals.

.6 Section 32 17 23 - Pavement Marking.

1.2 REFERENCES

.1 Environmental Protection Agency (EPA)

.1 EPA Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, Method 24 (for Surface Coatings).

.2 Master Painters Institute (MPI)

.1 MPI Architectural Painting Specifications Manual

.3 Society for Protective Coatings (SSPC).

.1 SSPC Painting Manual, Systems and Specifications Manual.

.4 National Fire Code of Canada.

1.3 QUALITY ASSURANCE

.1 Contractor shall have a minimum of five years proven satisfactory experience. When requested, provide a list of last three comparable jobs including, job name and location, specifying authority, and project manager.

.2 Qualified journeyperson shall be engaged in painting work. Apprentices may be employed provided they work under the direct supervision of a qualified journeyperson in accordance with trade regulations.

.3 Conform to latest MPI requirements for exterior painting work including preparation and priming.

.4 Materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, solvents, etc.) shall be in accordance with MPI Painting Specification Manual "Approved Products" listing and shall be from a single manufacturer for each system used.

.5 Other paint materials such as linseed oil, shellac, turpentine, etc. shall be the highest quality product of an approved manufacturer listed in MPI Painting Specification Manual and shall be compatible with other coating materials as required.

.6 Retain purchase orders, invoices and other documents to prove conformance with noted MPI requirements when requested by Owner's Representative.

.7 Standard of Acceptance:

.1 Walls: No defects visible from a distance of 1000 mm at 90° to surface.

.2 Ceilings: No defects visible from floor at 45° to surface when viewed using final lighting source.

.3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

1.4 ENVIRONMENTAL PERFORMANCE REQUIREMENTS

.1 Provide paint products meeting MPI "Environmentally Friendly" E2 or E3 ratings based on VOC (EPA Method 24) content levels.

1.5 SCHEDULING OF WORK

.1 Submit work schedule for various stages of painting to Owner's Representative for approval. Submit schedule minimum of 48 hours in advance of proposed operations.

.2 Obtain written authorization from Owner's Representative for changes in work schedule.

.3 Schedule painting operations to prevent disruption of occupants in and about the building.

1.6 SUBMITTALS

.1 Submit product data and manufacturer's installation/application instructions for paints and coating products to be used.

.2 Submit WHMIS - MSDS - Material Safety Data Sheets.

.3 Upon completion, submit records of products used, records to be included in Operation and Maintenance Manuals. List products in relation to finish system and include the following:

.1 Product name, type and use.

.2 Manufacturer's product number.

.3 Colour numbers.

.4 Manufacturer's Material Safety Data Sheets (MSDS).

.5 MPI Environmentally Friendly classification system rating.

.4 Submit manufacturer's application instructions for each product specified.

.5 Submit duplicate 200 x 300 mm sample panels of each paint, stain, clear coating, with specified paint or coating in colours, gloss/sheen and textures required to MPI Painting Specification Manual standards submitted on the following substrate materials:

.1 3 mm plate steel for finishes over metal surfaces.

.2 13 mm birch plywood for finishes over wood surfaces.

.3 50 mm concrete block for finishes over concrete or concrete masonry surfaces.

.4 13 mm gypsum board for finishes over gypsum board and other smooth surfaces.

.6 When approved, samples shall become acceptable standard of quality for appropriate on-site surface with one of each sample retained on-site.

.7 Submit full range of available colours where colour availability is restricted.

1.7 QUALITY CONTROL

.1 When requested by the Owner's Representative or Paint Inspection Agency, prepare and paint designated surface, area, room or item (in each colour scheme) to requirements specified herein, with specified paint or coating showing selected colours, gloss/sheen, textures and workmanship to MPI Painting Specification Manual standards for review and approval. When approved, surface, area, room and/or items shall become acceptable standard of finish quality and workmanship for similar on-site work.

1.8 EXTRA MATERIALS

.1 Submit maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.

.2 Submit 1 - 4 litre can of each type and colour of finish coating. Identify colour and paint type in relation to established colour schedule and finish formula.

.3 Deliver to Owner's Representative and store where directed.

1.9 DELIVERY, HANDLING AND STORAGE

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

.2 Deliver and store materials in original containers, sealed, with labels intact.

.3 Labels shall clearly indicate:

.1 Manufacturer's name and address.

.2 Type of paint or coating.

.3 Compliance with applicable standard.

.4 Colour number in accordance with established colour schedule.

.4 Remove damaged, opened and rejected materials from site.

.5 Provide and maintain dry, temperature controlled, secure storage.

.6 Observe manufacturer's recommendations for storage and handling.

.7 Store materials and supplies away from heat generating devices.

.8 Store materials and equipment in a well ventilated area with temperature range 7ºC to 30ºC.

.9 Store temperature sensitive products above minimum temperature as recommended by manufacturer.

.10 Keep areas used for storage, cleaning and preparation, clean and orderly to approval of Consultant. After completion of operations, return areas to clean condition to approval of Consultant.

.11 Remove paint materials from storage only in quantities required for same day use.

.12 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.

.13 Fire Safety Requirements:

.1 Provide one 9 kg Type ABC dry chemical fire extinguisher adjacent to storage area.

.2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.

.3 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada.

.14 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials.

1.10 SITE REQUIREMENTS

.1 Heating, Ventilation and Lighting:

.1 Ventilate enclosed spaces.

.2 Perform no painting work unless adequate and continuous ventilation and sufficient heating facilities are in place to maintain ambient air and substrate temperatures above 10ºC for 24 hours before, during and after paint application until paint has cured sufficiently.

.3 Where required, provide continuous ventilation for seven days after completion of application of paint.

.4 Provide temporary ventilating and heating equipment where permanent facilities are not available.

.5 Perform no painting work unless a minimum lighting level of 323 Lux is provided on surfaces to be painted. Adequate lighting facilities shall be provided by General Contractor.

.2 Temperature, Humidity and Substrate Moisture Content Levels:

.1 Unless specifically pre-approved by Owner's Representative and, applied product manufacturer, perform no painting work when:

.1 ambient air and substrate temperatures are below 10ºC.

.2 substrate temperature is over 32ºC unless paint is specifically formulated for application at high temperatures.

.3 substrate and ambient air temperatures are expected to fall outside MPI or paint manufacturer's prescribed limits.

.4 the relative humidity is above 85% or when dew point is less than 3ºC variance between air/surface temperature.

.5 rain or snow are forecast to occur before paint has thoroughly cured or when it is foggy, misty, raining or snowing at site.

.2 Perform no painting work when maximum moisture content of substrate exceeds:

.1 12% for concrete and masonry (clay and concrete brick/block).

.2 15% for wood.

.3 12% for plaster and gypsum board.

.3 Conduct moisture tests using a properly calibrated electronic Moisture Meter, except test concrete floors for moisture using a simple "cover patch test".

.4 Test concrete, masonry and plaster surfaces for alkalinity as required.

.3 Surface and Environmental Conditions:

.1 Apply paint finish only in areas where dust is no longer being generated by related construction operations or when wind or ventilation conditions are such that airborne particles will not affect quality of finished surface.

.2 Apply paint only to adequately prepared surfaces and to surfaces within moisture limits noted herein.

.3 Apply paint only when previous coat of paint is dry or adequately cured.

.4 Apply paint finishes only when conditions forecast for entire period of application fall within manufacturer's recommendations.

.5 Do not apply paint when:

.1 Temperature is expected to drop below 10ºC before paint has thoroughly cured.

.2 Substrate and ambient air temperatures are expected to fall outside MPI or paint manufacturer's limits.

.3 Surface to be painted is wet, damp or frosted.

.6 Provide and maintain cover when paint must be applied in damp or cold weather. Heat substrates and surrounding air to comply with temperature and humidity conditions specified by manufacturer. Protect until paint is dry or until weather conditions are suitable.

.7 Schedule painting operations such that surfaces exposed to direct, intense sunlight are scheduled for completion during early morning.

.8 Remove paint from areas which have been exposed to freezing, excess humidity, rain, snow or condensation. Prepare surface again and repaint.

.9 Paint occupied facilities in accordance with approved schedule only. Schedule operations to approval of the Owner's Representative such that painted surfaces will have dried and cured sufficiently before occupants are affected.

1.11 WASTE MANAGEMENT AND DISPOSAL

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

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Place materials defined as hazardous or toxic in designated containers.

.4 Ensure emptied containers are sealed and stored safely.

.5 Unused paint, coating materials must be disposed of at official hazardous material collections site as approved by Owner's Representative.

.6 Paint, stain and wood preservative finishes and related materials (thinners, and solvents) are regarded as hazardous products and are subject to regulations for disposal.

.7 Material which cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.

.8 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.

.9 To reduce the amount of contaminants entering waterways, sanitary/storm drain systems or into ground follow these procedures:

.1 Retain cleaning water for water-based materials to allow sediments to be filtered out.

.2 Retain cleaners, thinners, solvents and excess paint and place in designated containers and ensure proper disposal.

.3 Return solvent and oil soaked rags used during painting operations for contaminant recovery, proper disposal, or appropriate cleaning and laundering.

.4 Dispose of contaminants in approved legal manner in accordance with hazardous waste regulations.

.10 Empty paint cans are to be dry prior to disposal or recycling (where available).

PART 2 PRODUCTS

2.1 MATERIALS

.1 Paint materials listed in the latest edition of the MPI Approved Products List (APL) are acceptable for use on this project.

.2 Paint materials for each coating formula to be products of a single manufacturer.

.3 Low odour products: whenever possible, select products exhibiting low odour characteristics. If two products are otherwise equivalent, select the product with the lowest odour. Only qualified products with E2 or E3 "Environmentally Friendly" rating are acceptable for use on this project.

.4 Paints, coatings, adhesives, solvents, cleaners, lubricants, and other fluids, shall:

.1 be water-based, water soluble, water clean-up.

.2 be non-flammable

.3 be manufactured without compounds which contribute to ozone depletion in the upper atmosphere.

.4 be manufactured without compounds which contribute to smog in the lower atmosphere.

.5 do not contain methylene chloride, chlorinated hydrocarbons, toxic metal pigments.

.5 Water-borne surface coatings must be manufactured and transported in a manner that steps of processes, including disposal of waste products arising therefrom, will meet requirements of applicable governmental acts, by-laws and regulations including, for facilities located in Canada, Fisheries Act and Canadian Environmental Protection Act (CEPA).

.6 Water-borne surface coatings must not be formulated or manufactured with aromatic solvents, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavelant chromium or their compounds.

.7 Water-borne surface coatings must have a flash point of 61.0ºC or greater.

.8 Both water-borne surface coatings and recycled water-borne surface coatings must be made by a process that does not release:

.1 Matter in undiluted production plant effluent generating a 'Biochemical Oxygen Demand' (BOD) in excess of 15 mg/L to a natural watercourse or a sewage treatment facility lacking secondary treatment.

.2 Total Suspended Solids (TSS) in undiluted production plant effluent in excess of 15 mg/L to a natural watercourse or a sewage treatment facility lacking secondary treatment.

.9 Water-borne paints and stains, and water borne varnishes must meet a minimum "Environmentally Friendly" E2 rating.

2.2 COLOURS

.1 Colors of light tower white to match existing.

.2 Where specific products are available in a restricted range of colours, selection will be based on the limited range.

.3 Second coat in a three coat system to be tinted slightly lighter colour than top coat to show visible difference between coats.

2.3 MIXING AND TINTING

.1 Perform colour tinting operations prior to delivery of paint to site. On-site tinting of painting materials is allowed only with Owner's Representative written permission.

.2 Paste, powder or catalyzed paint mixes shall be mixed in strict accordance with manufacturer's written instructions.

.3 Where thinner is used, addition shall not exceed paint manufacturer's recommendations. Do not use kerosene or any such organic solvents to thin water-based paints.

.4 Thin paint for spraying according in strict accordance with paint manufacturer's instructions. If directions are not on container, obtain instructions in writing from manufacturer and provide copy of instructions to Owner's Representative.

.5 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.

2.4 PAINTING SYSTEMS

.1 EXTERIOR GALVANIZED STEEL SECTIONS

Surface Preparation
Pressure wash to remove all existing coating that are on the steel surface. Power Tool Clean SSPC-SP-11 to roughen the exposed Galvanized Surface and to remove all rust that has developed on the surface.

Coating Application
Primer:
Apply 2 coats of Amerlock 2 Surface Tolerant Epoxy Coating @ 5-7 mils Dry Film Thickness per Coat.

Topcoat:
Apply one coat of Amershield High Solids Polyurethane coating at 3 to 5 mils Dry Film Thickness.

.2 CONCRETE SURFACES – INTERIOR & EXTERIOR

Surface Preparation
Pressure wash the entire concrete structure to remove all loose coating and other contaminants that are on the surface. REFER TO SECTION 03 01 31 FOR REPAIR PROCESS OF CONCRETE SURFACES PRIOR TO APPLICATION OF PRIMER.

Coating Application
Primer:
Apply 1 coat touch up coat of MasterProtect HB 300 SB to any bare concrete areas.

Topcoats:
Apply 2 coats of MasterProtect HB 300 SB Coating to the entire concrete surface. Apply as per manufacturers' written instructions.

.3 CAST IRON LIGHT TOWER

Surface Preparation
Pressure Wash using fresh water to remove all chlorides and contaminants that are on the surface. Abrasive Blast the complete structure to SSPC-SP-10 Near White Metal to achieve an anchor Profile of 2.0 mils.

Pitt Filling
These older structures usually show a large amount of pitting that must be addressed prior to coating. Any blasted areas that show pitting are to be filled with Belzona 1111 Super Metal Paste Grade Metallic Filler. Pits should be filled flush with surrounding steel area prior to priming.

Primer
Once all pitting has been addressed apply one coat of Amercoat 370 Epoxy @ 5 mils Dry Film Thickness. Apply to both the interior and exterior of the structure. This will serve to hold the blast and act as primer for subsequent coats.

Elastomeric Polyurea Coating
Apply one coat (by Plural Spray) of PPG Amerthane 490 Elastomeric Polyurea Hibrid Coating @ 60 Mils Dry Film Thickness to the interior of the structure.

Apply one coat (by Plural Spray) of PPG Amerthane 490 Elastomeric Polyurea Hibrid Coating @ 80 Mils Dry Film Thickness to the exterior of the structure.

Topcoat
Apply one coat of PPG Amershield High Solids Polyurethane @ 3 Mils Dry Film Thickness to both the Interior and Exterior of the structure. Colour White and 509-102 Coast Guard Red.

.4 Interior: Walls and Ceiling of Porch (Wood)
One coat of primer to CAN/CGSB-1, two coats semi-gloss enamel (White) to CAN/CGSB1.195.

.5 Steel Insulated Exterior Door
One coat primer CAN/CSGB-1.198, two coats semi-gloss enamel CAN/CGSB-1.195 color (White).

PART 3 EXECUTION

3.1 GENERAL

.1 Perform preparation and operations for exterior painting in accordance with MPI Painting Specifications Manual except where specified otherwise.

.2 Apply all paint materials in accordance with paint manufacturer's written application instructions.

3.2 EXISTING CONDITIONS

.1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report to Owner's Representative damages, defects, unsatisfactory or unfavourable conditions before proceeding with work.

.2 Conduct moisture testing of surfaces to be painted using a properly calibrated electronic moisture meter, except test concrete floors for moisture using a simple "cover patch test" and report findings to Owner's Representative. Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.

.3 Maximum moisture content as follows:

.1 Concrete: 12%.

.2 Clay and Concrete Block/Brick: 12%.

.3 Wood: 15%.

3.3 PROTECTION

.1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore such surfaces as directed by Owner's Representative.

.2 Cover or mask windows and other ornamental hardware adjacent to areas being painted to prevent damage and to protect from paint drops and splatters. Use non-staining coverings.

.3 Protect items that are permanently attached such as Fire Labels on doors and frames.

.4 Protect factory finished products and equipment.

.5 Protect passing pedestrians, building occupants and general public in and about the building.

.6 Remove electrical cover plates, light fixtures, surface hardware on doors, and all other surface mounted fittings, equipment and fastenings prior to undertaking any painting operations. Store for re-installation after painting is completed.

.7 Cover or move exterior furniture and portable equipment around building as necessary to carry out painting operations. Replace as painting operations progress.

.8 As painting operations progress, place "WET PAINT" signs in areas of work to approval of Owner's Representative.

3.4 CLEANING AND PREPARATION

.1 Clean and prepare exterior surfaces in accordance with MPI Painting Specification Manual requirements. Refer to the MPI Manual in regard to specific requirements and as follows:

.1 All existing interior and exterior painted surfaces shall be stripped of paint using methods as outlined in this Section 2.4 "Painting Systems". This includes but is not limited to walls, ceilings, floors, and concrete, steel and aluminum surfaces. Contractor shall submit to engineer, for approval, type of blasting to be used for various areas of light tower.

.2 Remove dust, dirt, and other surface debris by wiping with dry, clean cloths or compressed air.

.3 Wash surfaces with a biodegradable detergent and bleach where applicable and clean warm water using a stiff bristle brush to remove dirt, oil and other surface contaminants.

.4 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.

.5 Allow surfaces to drain completely and allow to dry thoroughly.

.6 Prepare surfaces for water-based painting, water-based cleaners should be used in place of organic solvents.

.7 Use trigger operated spray nozzles for water hoses.

.8 Many water-based paints cannot be removed with water once dried. However, minimize the use of kerosene or any such organic solvents to clean up water-based paints.

.2 Prevent contamination of cleaned surfaces before prime coat is applied and between applications of remaining coats. Apply primer, paint, or pretreatment as soon as possible after cleaning and before deterioration occurs.

.3 Where possible, prime surfaces of new wood surfaces before installation. Use same primers as specified for exposed surfaces.

.1 Apply vinyl sealer to MPI #36 over knots, pitch, sap and resinous areas.

.2 Apply wood filler to nail holes and cracks.

.3 Tint filler to match stains for stained woodwork.

.4 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1000 mm.

.5 Clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements. Remove traces of blast products from surfaces, pockets and corners to be painted by brushing with clean brushes or blowing with clean dry compressed air.

.6 Touch up of shop primers with primer as specified in applicable section. Major touch-up including cleaning and painting of field connections, welds, rivets, nuts, washers, bolts, and damaged or defective paint and rusted areas, shall be by supplier of fabricated material.

.7 Do not apply paint until prepared surfaces have been accepted by Owner's Representative.

3.5 APPLICATION

.1 Method of application to be as approved by Owner's Representative. Apply paint by brush roller, air sprayer, airless sprayer. Conform to manufacturer's application instructions unless specified otherwise.

.2 Brush and Roller Application:

.1 Apply paint in a uniform layer using brush and/or roller of types suitable for application.

.2 Work paint into cracks, crevices and corners.

.3 Paint surfaces and corners not accessible to brush using spray, daubers and/or sheepskins. Paint surfaces and corners not accessible to roller using brush, daubers or sheepskins.

.4 Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces shall be free of roller tracking and heavy stipple.

.5 Remove runs, sags and brush marks from finished work and repaint.

.3 Spray Application:

.1 Provide and maintain equipment that is suitable for intended purpose, capable of properly atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.

.2 Keep paint ingredients properly mixed in containers during paint application either by continuous mechanical agitation or by intermittent agitation as frequently as necessary.

.3 Apply paint in a uniform layer, with overlapping at edges of spray pattern.

.4 Brush out immediately runs and sags.

.5 Use brushes to work paint into cracks, crevices and places which are not adequately painted by spray.

.4 Use dipping, sheepskins or daubers only when no other method is practical in places of difficult access and only when specifically authorized by Owner's Representative.

.5 Apply coats of paint as a continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.

.6 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.

.7 Sand and dust between coats to remove visible defects.

.8 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as projecting ledges.

.9 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

3.6 MECHANICAL/ELECTRICAL EQUIPMENT

.1 Unless otherwise specified, paint exterior exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment with colour and finish to match adjacent surfaces, except as noted otherwise.

.2 Touch up scratches and marks on factory painted finishes and equipment with paint as supplied by manufacturer of equipment.

.3 Paint fire protection piping red.

.4 Do not paint over nameplates.

.5 Paint steel electrical light standards. Do not paint outdoor transformers and substation equipment.

3.7 FIELD QUALITY CONTROL

.1 Field inspection of exterior painting operations to be carried out by Owner's Representative.

.2 Advise Owner's Representative when each applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.

.3 Co-operate with Owner's Representative and provide access to areas of work.

3.8 RESTORATION

.1 Clean and re-install all hardware items removed before undertaken painting operations.

.2 Remove protective coverings and warning signs as soon as practical after operations cease.

.3 Remove paint splashings on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.

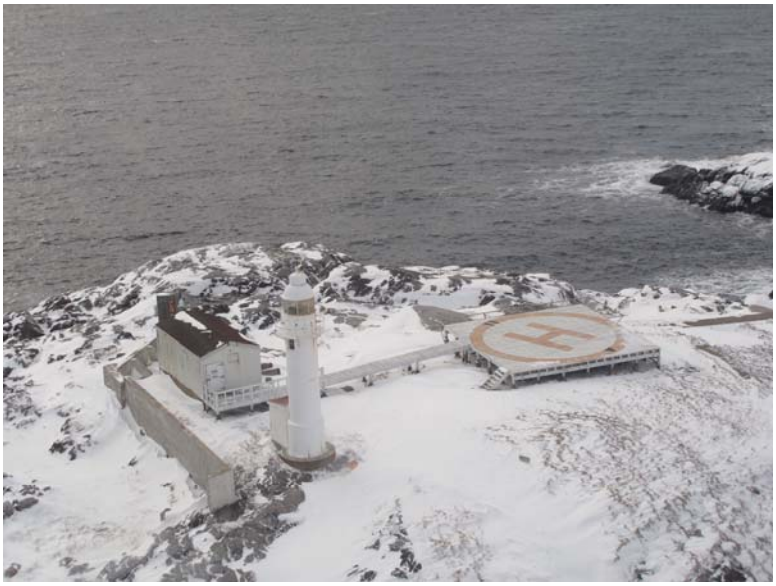
.4 Protect surfaces from paint droppings and dust to approval of Owner's Representative. Avoid scuffing newly applied paint.

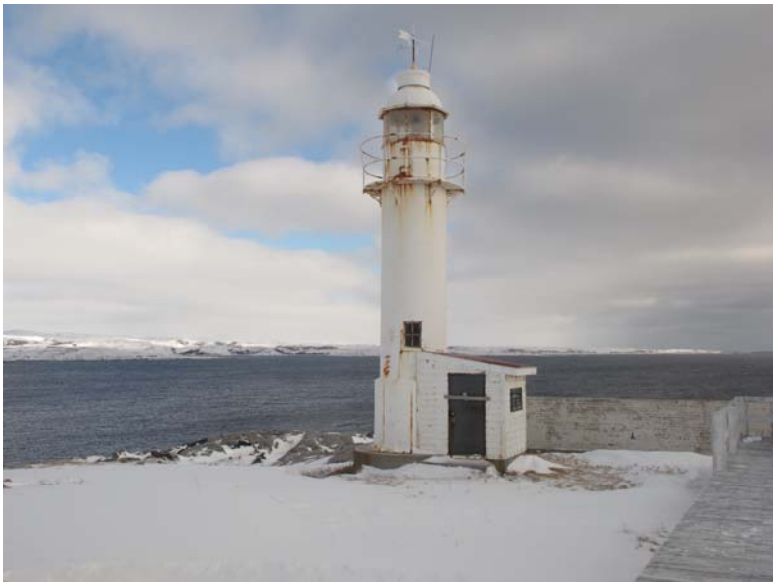
.5 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Owner's Representative.

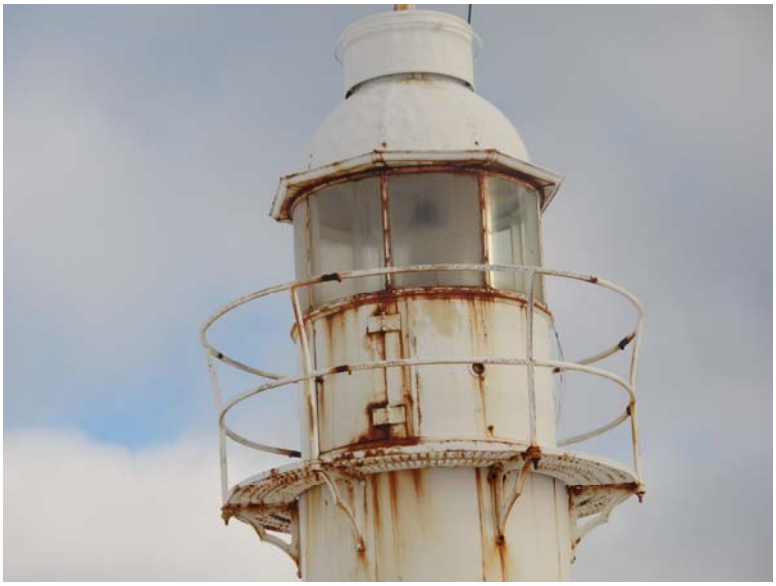
General Note: All cast iron sections are to be inspected by the manufacturer's trained technical representative (Inspector), acceptable to the specifying authority and Departmental Representative, prior to repainting. The cost of the "Inspector" is to be borne by the Contractor. Assume a minimum of three inspections from the Inspector is to be made prior to and during application of paint on cast iron sections, to ensure proper application. After each site visit, provide written report to the Departmental Representative within five (5) working days with the testing results and certifications.

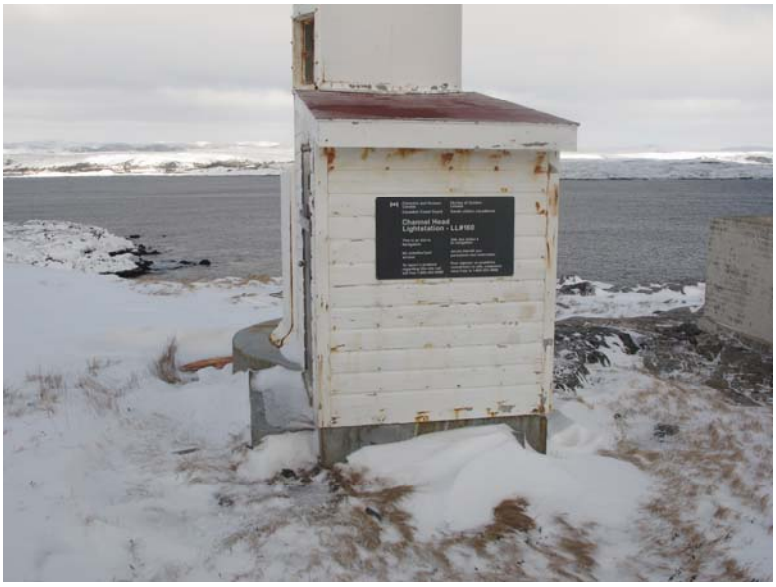
Appendix A:

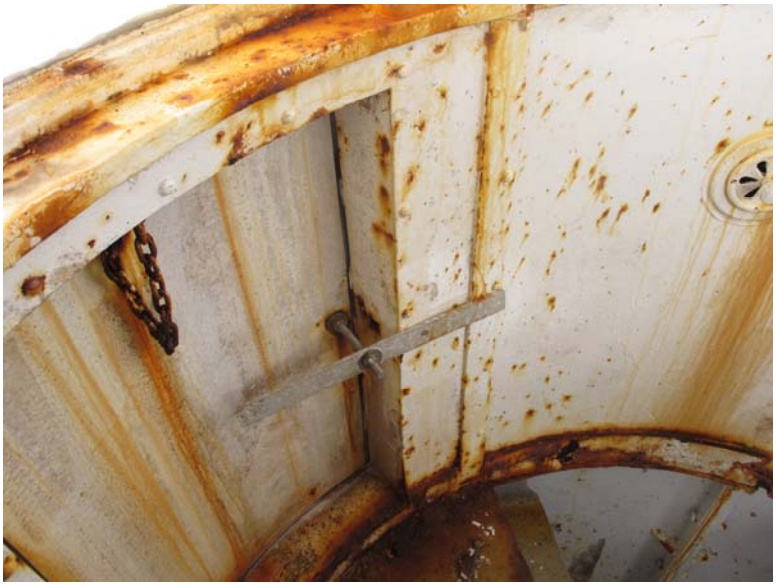
Site Pictures

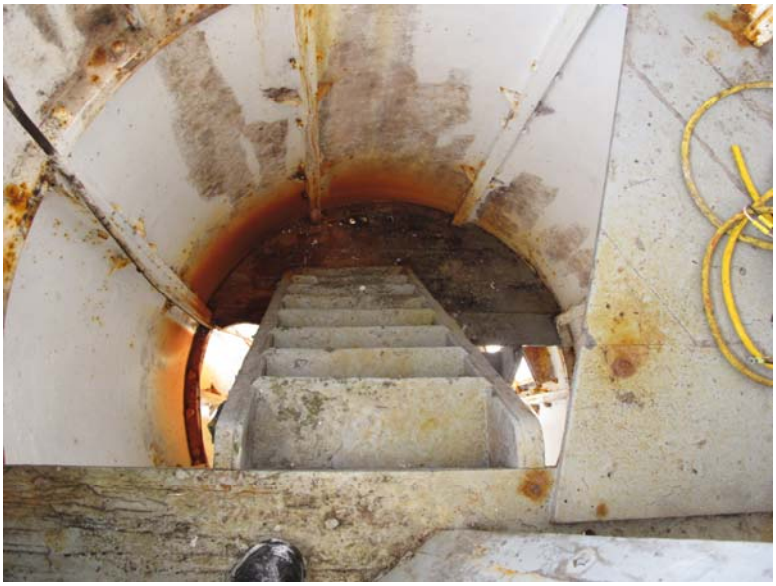


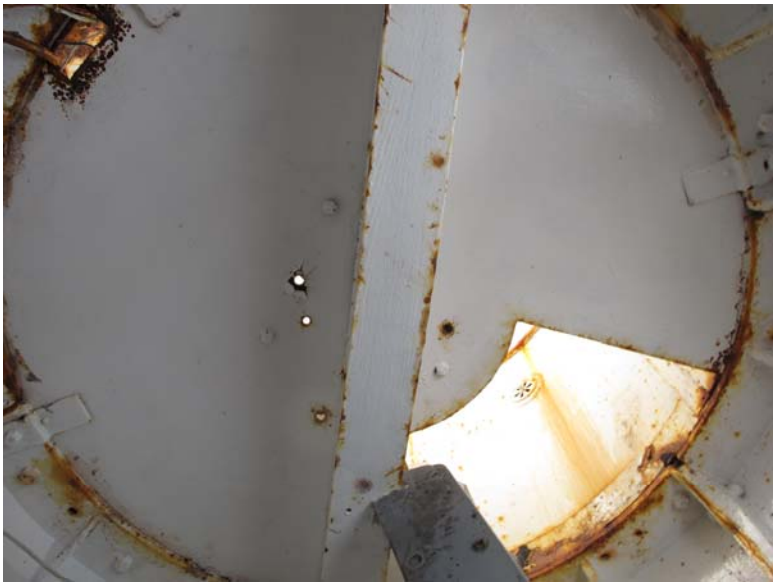


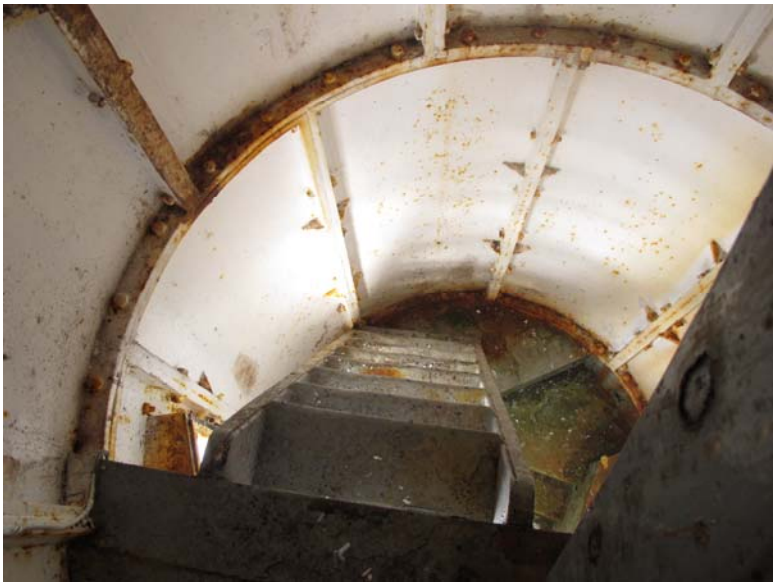


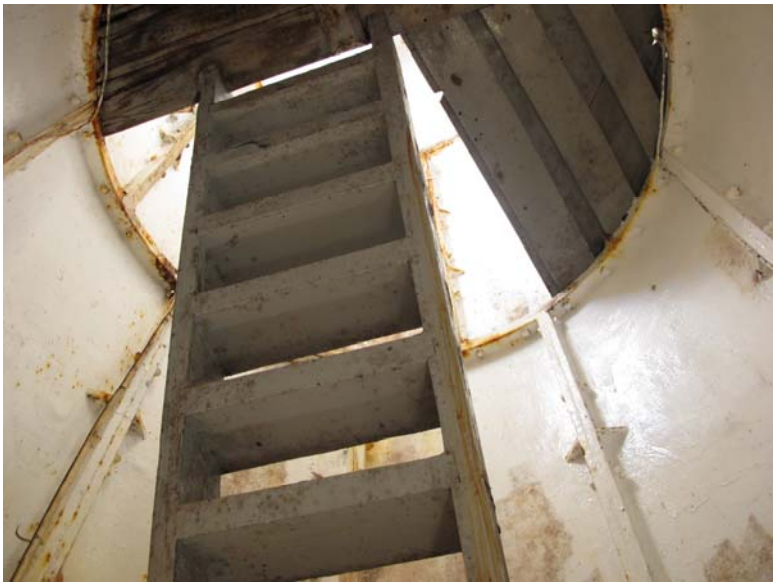

Channel Head
Lightstation - LL#160

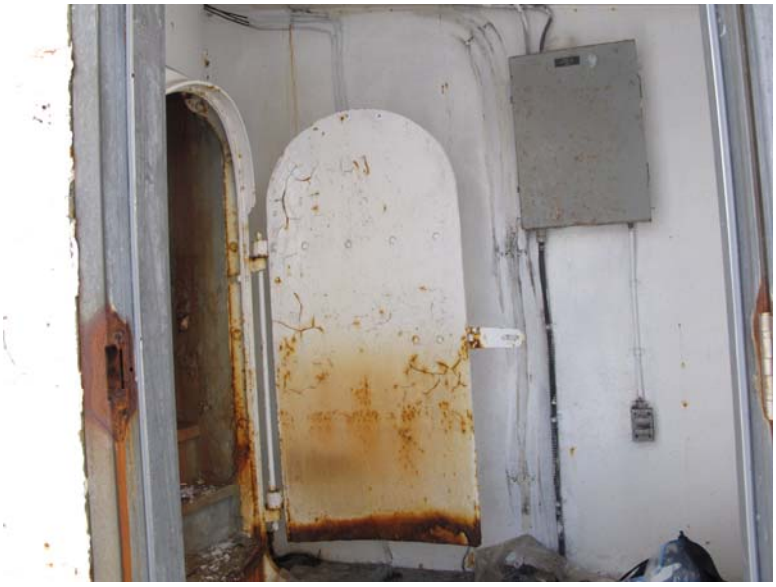


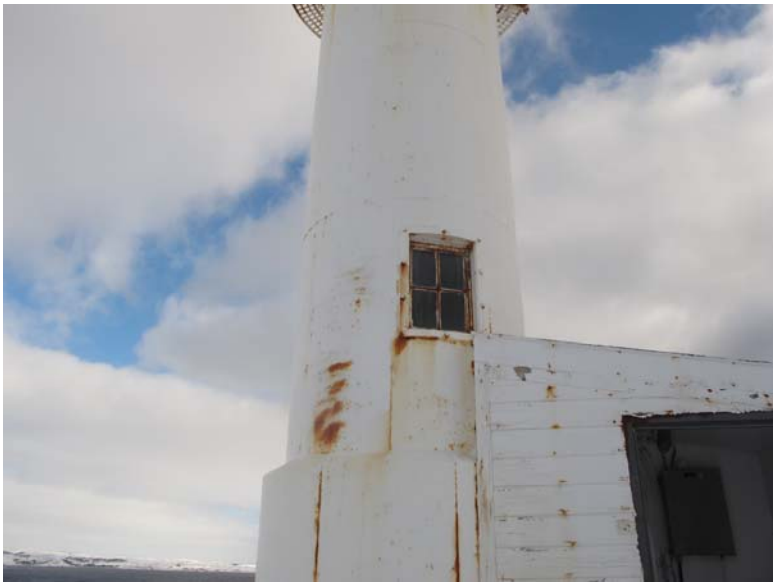


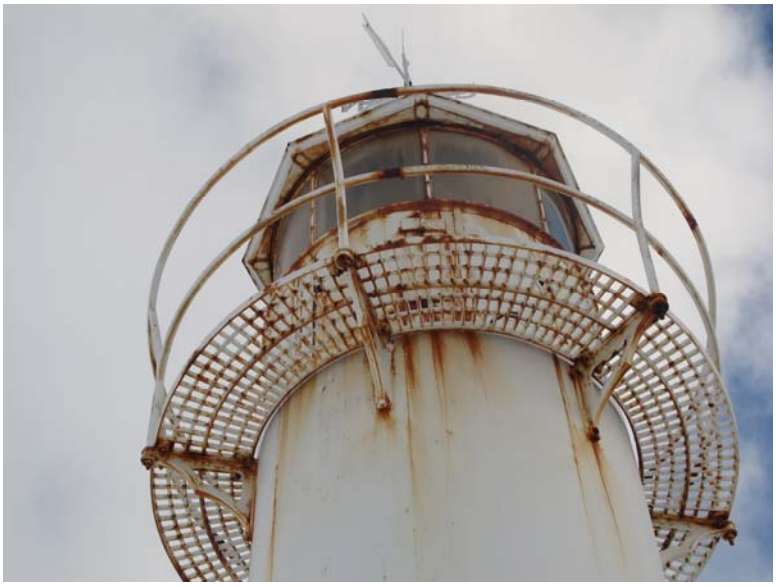


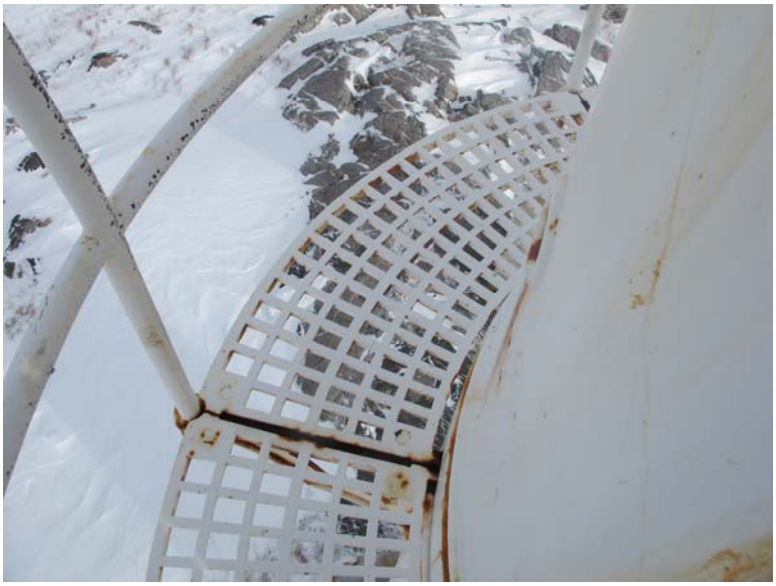












Appendix B:

Lead Paint Analysis (Maxxam)

Maxxam
A Bureau Veritas Group Company

Success Through Science®

Your Project #: 5-663
Site Location: CHANNEL HEAD-PORT AUX BASQUES
Your C.O.C. #: 5-663

Attention:NEIL HUNT

AFN Engineering Inc
29 Brad Gushue Crescent
St. John's, NL
A1H 0A3

Report Date: 2015/01/30
Report #: R3317156
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B511045
Received: 2015/01/21, 10:53

Sample Matrix: Paint
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Asbestos (1)	1	N/A	2015/01/29	SYD SOP 00174	NIOSH 9002 m
Metals Leach TCLP/CGSB extraction (2)	5	2015/01/23	2015/01/24	ATL SOP 00058	EPA 6020A R1 m
TCLP Inorganic extraction - pH (2)	5	N/A	2015/01/23	ATL SOP 00035	EPA 1311 m
TCLP Inorganic extraction - Weight (2)	5	N/A	2015/01/23	ATL SOP 00035	EPA 1311 m

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Maxxam Sydney
(2) This test was performed by Maxxam Bedford

Encryption Key

Maxxam
30 Jan 2015 13:35:28 -03:30

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Avery Withrow, Project Manager
Email: AWithrow@maxxam.ca
Phone# (902)420-0203 Ext:233
==========
This report has been generated and distributed using a secure automated process.
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Analytics International Corporation o/a Maxxam Analytics 49-55 Elizabeth Ave, Suite 101A, St.John's, NL, Canada A1A 1W9 Tel: 709-754-0203 Toll Free: 888-492-7227 Fax: 709-754-8612 www.maxxamanalytics.com

Maxxam Job #: B511045
Report Date: 2015/01/30

AFN Engineering Inc
Client Project #: 5-663
Site Location: CHANNEL HEAD-PORT AUX BASQUES

ATLANTIC TCLP LEACHATE + LEAD (PAINT)

Maxxam ID		ZF7409	ZF7410	ZF7411		ZF7412		
Sampling Date		2015/01/14	2015/01/14	2015/01/14		2015/01/14		
COC Number		5-663	5-663	5-663		5-663		
	Units	**PAINT SAMPLE #1**	**PAINT SAMPLE #2**	**PAINT SAMPLE #3**	**RDL**	**PAINT SAMPLE #4**	**RDL**	**QC Batch**
Inorganics								
Sample Weight (as received)	g	50	24	48	N/A	19	N/A	3895892
Initial pH	N/A	9.3	NA	NA		NA		3895893
Final pH	N/A	5.1	5.3	4.9		5.1		3895893
Metals								
Leachable Lead (Pb)	ug/L	2800	1600	4300	5.0	870000	50	3895915

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

Maxxam ID		ZF7413		
Sampling Date		2015/01/14		
COC Number		5-663		
	Units	**PAINT SAMPLE #5**	**RDL**	**QC Batch**
Inorganics				
Sample Weight (as received)	g	28	N/A	3895892
Initial pH	N/A	NA		3895893
Final pH	N/A	5.0		3895893
Metals				
Leachable Lead (Pb)	ug/L	18000	5.0	3895915

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam Job #: B511045
Report Date: 2015/01/30

AFN Engineering Inc
Client Project #: 5-663
Site Location: CHANNEL HEAD-PORT AUX BASQUES

RESULTS OF ANALYSES OF PAINT

Maxxam ID		ZF7414		
Sampling Date		2015/01/14		
COC Number		5-663		
	Units	**SHINGLE SAMPLE #1**	**RDL**	**QC Batch**
Inorganics				
Asbestos	%	<1.0	1.0	3901816
Chrysotile Asbestos	%	<1.0	1.0	3901816
Amosite Asbestos	%	<1.0	1.0	3901816
Crocidolite Asbestos	%	<1.0	1.0	3901816
Tremolite Asbestos	%	<1.0	1.0	3901816
Cellulose	%	<1.0	1.0	3901816
Mineral Wool	%	<1.0	1.0	3901816
Glass Fibres	%	<1.0	1.0	3901816
Hair	%	<1.0	1.0	3901816
Miscellaneous Fibres	%	<1.0	1.0	3901816
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				

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Maxxam Job #: B511045
Report Date: 2015/01/30

AFN Engineering Inc
Client Project #: 5-663
Site Location: CHANNEL HEAD-PORT AUX BASQUES

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	14.6°C

Sample ZF7410-01 : Method Deviation Comment: Reduced sample weight used for leachate procedure due to insufficient sample. All extraction ratios maintained. Minimal impact on sample data quality.

Sample ZF7411-01 : Method Deviation Comment: Reduced sample weight used for leachate procedure due to insufficient sample. All extraction ratios maintained. Minimal impact on sample data quality.

Sample ZF7412-01 : Method Deviation Comment: Reduced sample weight used for leachate procedure due to insufficient sample. All extraction ratios maintained. Minimal impact on sample data quality.

Sample ZF7413-01 : Method Deviation Comment: Reduced sample weight used for leachate procedure due to insufficient sample. All extraction ratios maintained. Minimal impact on sample data quality.

RESULTS OF ANALYSES OF PAINT

Asbestos: A non-proficient status was obtained for the last performance testing round. No impact on data quality.

Results relate only to the items tested.

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Maxxam Job #: B511045
Report Date: 2015/01/30

AFN Engineering Inc
Client Project #: 5-663
Site Location: CHANNEL HEAD-PORT AUX BASQUES

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
3895892	GDX	Method Blank	Sample Weight (as received)	2015/01/23	NA		g	
3895915	DLB	Matrix Spike [ZF7409-01]	Leachable Lead (Pb)	2015/01/24		NC	%	75 - 125
3895915	DLB	Spiked Blank	Leachable Lead (Pb)	2015/01/24		105	%	80 - 120
3895915	DLB	Method Blank	Leachable Lead (Pb)	2015/01/24	<5.0		ug/L	

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

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Maxxam Job #: B511045
Report Date: 2015/01/30

AFN Engineering Inc
Client Project #: 5-663
Site Location: CHANNEL HEAD-PORT AUX BASQUES

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Kevin MacDonald, Inorganics Supervisor

Michelle Mombourquette, Laboratory Manager

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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